**Ghana's Health Policy: Human Resources and Health Outcomes Inequality in Northern and Southern Ghana**

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**ABSTRACT**

Despite evidence of widening geographical inequalities in maternal and child health (MCH) coverage and outcomes between the Upper West region (UWR) in the north and the Ashanti region (AR) and Greater Accra region (GAR) in southern Ghana, the relative importance of the underlying social determinants remains unexplored. Policy to reduce MCH inequalities is therefore missing important checks on likely effectiveness. One possibility explored in this thesis based on evidence from national MCH surveys and qualitative studies is that differential access to skilled MCH Providers is an important explanation and a matter for policy attention. Using convergent mixed methods research design, this study assessed whether in Ghana's context specifically, increased geographical access to life-course high-impact MCH interventions by primary health care level skilled MCH Providers might contribute more significantly and more immediately to reduction in maternal and neonatal mortality inequalities. Thus, policies to improve, for example, education, income and occupation seen as appropriate measures in other national contexts contribute less. Studies elsewhere support this thesis: maternal and neonatal mortalities responded best to increases in availability of trained service providers. The study throws light on how informed investment in innovative, local-context HRH policy interventions in MCH resource-poor and rural locations could reduce Ghana's geographical health inequalities. The findings suggest narrowing neonatal and institutional maternal mortality inequalities more in response to increased geographical accessibility, utilization and coverage of skilled MCH Provider services in UWR than mother's education, income and occupation. UWR's own recent skilled MCH Providers attraction and retention interventions; and decentralized integrated midwifery/nursing training national policy narrowed the perennial doctor and midwife density gaps between UWR and the AR and GAR. Thus, with evidence-based accelerated state investment in properly decentralized HRH functions and budget, infrastructure and

social amenities in UWR (and sister unattractive regions), universal health coverage and sustainable MCH inequalities reduction appear attainable in Ghana.

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| | | |
|---|---|---|
| AFRC | - | Armed Forces Revolutionary Council |
| ANC | - | Antenatal Care |
| ANS | - | Autonomic Nervous System |
| ART | - | Antiretroviral Treatment |
| AR | - | Ashanti Region |
| CHN | - | Community Health Nurse |
| CHO | - | Community Health Officer |
| CHP | - | Child Health Policy |
| CHPS | - | Community-based Health Planning and Services |
| CHS | - | Child Health Strategy |
| CMR | - | Child Mortality Rate |
| CPP | - | Convention People's Party |
| CSM | - | Cerebrospinal Meningitis |
| DDHS | - | District Director of Health Service |
| DHD | - | District Health Directorate |
| DHIMS | - | District Health Information Management System |
| DHMT | - | District Health Management Team |
| DNA | - | Deoxyribonucleic Acid |
| EIA | - | Explanatory Interractive Action |
| FBD | - | Facility-Based Delivery |
| FGD | - | Focus Group Discussion |
| FP | - | Family Planning |
| GAR | - | Greater Accra Region |
| GDHS | - | Ghana Demographic and Health Survey |
| GDP | - | Gross Domestic Product |
| GEHIP | - | Ghana Essential Health Intervention Project |
| GHiLMIS | - | Ghana integrated Logistics Management Information System |
| GHS | - | Ghana Health Service |
| GHS-UER | - | Ghana Health Service-Upper East Region |

| | | |
|---|---|---|
| GLSS | - | Ghana Living Standards Survey |
| GNP | - | Gross Nation Product |
| GPI | - | Gender Parity Index |
| GSGDA | - | Ghana Shared Growth and Development Agenda |
| GSS | - | Ghana Statistical Service |
| HIV | - | Human Immunodeficiency Virus |
| HPA | - | Hypothalamic-Pituitary Axis |
| HPI | - | Human Poverty Index |
| HRH | - | Human Resources for Health |
| HRMIS | - | Human Resource Management Information System |
| IDI | - | In-depth Interview |
| IMR | - | Infant Mortality Rate |
| IYF | - | Infant and Young Feeding |
| LCHD | - | Life Course Health Development |
| LEAP | - | Livelihood Empowerment against Poverty |
| LLITN | - | Long Lasting Insecticide Treated Net |
| LMD | - | Last Mile Distribution |
| LMICs | - | Low and Middle Income Countries |
| MC | - | Modern Contraceptives |
| MCH | - | Maternal and Child Health |
| MCHRB | - | Maternal and Child Health Record Book |
| MDGs | - | Millennium Development Goals |
| MICS | - | Multiple Indicator Cluster Survey |
| MMR | - | Maternal Mortality Rate |
| MNCH | - | Maternal, Neonatal and Child Health |
| MOH | - | Ministry of Health |
| MSS | - | Medical Screening for Schools |
| NACP | - | National AIDS Control Program |
| NDPC | - | National Development Planning Commission |
| NHIS | - | National Health Insurance Scheme |

| NIDs | - | National Immunisation Days |
| NLC | - | National Liberation Council |
| NMR | - | Neonatal Mortality Rate |
| NPP | - | New Patriotic Party |
| PDA | - | Preventive Detention Act |
| PHC | - | Primary Health Care |
| PMTCT | - | Prevention of Mother to Child Transmission |
| PNDC | - | Provisional National Defense Council |
| PNP | - | People's National Party |
| PP | - | Progress Party |
| PPH | - | Post-partum Haemorrhage |
| RA | - | Research Assistant |
| RNMCH | - | Reproductive, Newborn, Maternal and Child Health |
| SAP | - | Structural Adjustment Programs |
| SDGs | - | Sustainable Development Goals |
| SDOH | - | Social Determinants of Health |
| SMC | - | Supreme Military Council |
| TBA | - | Traditional Birth Attendant |
| TB | - | Tuberculosis |
| UDS | - | University for Development Studies |
| UGCC | - | United Gold Coast Convention |
| UHC | - | Universal Health Coverage |
| UNESCO | - | United Nations Educational Scientific and Cultural Organization |
| UNFPA | - | United Nations Population Fund |
| UNICEF | - | United Nations Children's Fund |
| UWR | - | Upper West Region |
| WASH | - | Water and Sanitation Hygiene |
| WHO | - | World Health Organization |
| WIFA | - | Women in Fertility Age |
| WLHA | - | Women Living with HIV/AIDS |

**CHAPTER ONE: INTRODUCTION**

**Introduction**

Ghana's widening health inequality gap, particularly in maternal and child health (MCH) measured through maternal mortality rate (MMR), neonatal mortality rate (NMR), infant mortality rate (IMR) and child mortality rate (CMR), between the Upper West Region (UWR) in the north, where maternal and child health is relatively very poor, and the Ashanti region (AR) and Greater Accra Region (GAR) in the south has become a matter of national policy concern and attention. Although health and socio-economic policy reforms and program interventions have been signaled in various long-term and medium-term development plans and implemented by successive governments, there has been little change in this circumstance. This thesis explores why this might be the case and whether there may be options for more effective investment for equitable access to health care resources and health personnel resources to reduce the inequalities.

This chapter outlines the background, problem statement and objectives of the study. It also introduces the rationale of the study, research questions, hypothesis; and the methods used to arrive at the evidence or findings. The chapter thus begins with some context about the importance of maternal and child health in Ghana and other low and middle-income countries modeled on the primary health care (PHC) approach to reduce morbidity and mortality. Concepts of health, health inequalities and the social determinants of health and health inequalities are discussed and, since these are largely founded in studies and policies in advanced western economies, how these relate to the Ghanaian context.

The human resource for health (HRH) policy interventions and outcomes of development plans intended to address health inequities and inequalities and achieve Ghana's MDGs particularly MDGs 4 and 5 of maternal and child health, are given particular attention to

provide the research context. The chapter closes with the researcher's positionality in the research and overview of the thesis.

**Background**

**MCH in low and middle-income Countries**

Ninety-nine percent of maternal and child deaths occur in low and middle-income countries (LMICs) where there is a severe HRH shortage as one most significant constraint to achieving the MDGs 4 and 5 (Gilmore and McAuliffe 2013). MCH in Ghana and other LMICs in sub-Saharan Africa are even more important due to the high total fertility rate, young population structure, women forming the bulk of their population and vulnerable groups (GSS, GHS & ICF International 2018). Access to quality MCH in the rural and deprived communities is thus a major challenge since 50% of Ghana's population, for instance, is located in these areas. Women empowerment is low in the largely male dominated traditional, religious, economic and political settings.

Ghana accordingly signed onto the Alma Ata Declaration, 1978 and built its health systems on primary health care (PHC) delivery and referral system with the Community-based Health Planning and Services (CHPS) as the basic unit (GHWO 2011; Nyonator et al 2005). A distinguishing feature is the focus on preventive services, health promotion and necessary minor treatment and referral (to nearest health center or district hospital) using trained community health workers (Gilmore and McAuliffe 2013). For community ownership and sustainability of health delivery, communities are technically guided to select their own suitable members to be trained on MCH and general community health-related services and supervised by health professionals (Nyonator et al 2005, GHWO 2011; Bawa et al 2017). Community health teams provide, inter alia, maternal and child immunization services, integrated management of Childhood illnesses, breastfeeding support, growth monitoring and

other nutrition and child welfare services, health education and disease surveillance including intervention defaulter tracing.

These essential services are delivered through home visits, outreach and school health services which form eighty percent of the Community Health Officer (CHO)'s working hours and twenty percent of the time on clinic-based care and referral management. To reduce morbidity and mortality relating to reproduction and sexual health, family planning, antenatal care, prevention of mother-to-child transmission (PMTCT) and maternal delivery services are provided at the community level through CHPS (Bawa et al 2017; GHWO 2011). Trained CHOs thus provide family planning and sexual health education as well as conduct emergency maternal deliveries and referral of normal deliveries and complicated cases (caesarean sections) to the assigned supervising midwife or doctor at the health center and district hospital respectively. To increase the direct presence of midwives in CHPS zones for quality MCH services and outcomes, midwives are increasingly being placed in CHPS facilities, particularly in deprived and rural areas (Bawa et al 2017; Zere et al 2012; Olorunsaiye, 2015). These midwives provide focused antennal care, skilled delivery and postnatal services as well as family planning and counseling services.

Other government agencies including the local government are responsible for the provision of sanitation, clean water and energy, food and other health-related services in the communities in collaboration with the health sector at the sub-district, district, regional and central levels (Nyonator et al 2005; GSS, GHS & ICF International 2015). For example, the School feeding program that aims to improve the pupils' nutritional outcomes and reduce the high malnutrition rates and up school enrolment among the vulnerable groups (poor, girl child etc.) is a Local Government, Ghana Education Service and Ghana Health Service collaborative. The program complements the Ghana Health Service's supplementary feeding program that targets children 59 months and below. These government agencies, with

technical and funding support of UNICEF, also collaborate to roll-out water and sanitation hygiene (WASH) interventions in primary, basic and secondary schools as well as WASH facilities provision in public places (Osei-Assibey 2014; UNICEF 2013). These interventions are aimed at prevention and reduction of the high sanitation and water-related morbidities and mortalities, particularly MCH (GSS, GHS & ICF International 2015; Osei-Assibey 2014; UNICEF-Ghana 2014).

Other strategies were introduced to reduce morbidity and mortality and achieve the MDGs 4 and 5 targets of reducing maternal and child mortalities by two-thirds and three-quarters respectively. These include government policies intended to remove financial barriers to maternal and child health care (Nsiah-Boateng 2015), health infrastructure expansion and improvement, provision of transport for CHPS service delivery (motorbikes) and supervision of CHPS services by sub-district and district health management teams (Bawa et al 2017).

While the approach yielded significant improvement in health over the years over and above progress in general socio-economic indicators (UNICEF and Government of Ghana 2014), it also exposed Ghana's geographical inequalities in health outcomes particularly MCH between the north and south. Historically, the UWR has been disadvantaged regarding needed accelerated investment in HRH, economic, infrastructure, health resources and services in favor of the AR and GAR (Government of Ghana 2014). The UWR has therefore remained unattractive to skilled health and related sector professionals due to its high poverty, poor living, working, and educational advancement conditions. Access to and utilization of quality maternal, child, reproductive, and other life course public health care and related services of skilled professionals have been very limited or lacking particularly in UWR's rural and inaccessible communities. Conversely, these skilled professionals are perennially over concentrated in the endowed AR and GAR.

The UWR perennially thus has the worse maternal, child and other health outcomes (Government of Ghana 2014; GDHS 1998, 2003, 2008; Zere et al 2012). For example, as recent as 2014, the UWR recorded a high of 5.9 per 1000 live births institutional neonatal mortality rate compared to 1.1 per 1000 live births and 6.3 per 1000 live births in the AR and GAR respectively. Similarly, UWR's institutional maternal mortality ratio was as high as 161.1 per 100,000 live births compared with 114.9 per 100,000 live births and 180.4 per 100, 000 live births in AR and GAR respectively (Ghana Health Service 2017). The trend has been trans-generational from Demographic and Health Surveys (DHS), Multiple Cluster Indicator Surveys (MICS), Ghana Living Standard Surveys (GLSS), and other survey reports. With UWR having the least population of 3% of Ghana's total population compared to 15% and 18% for AR and GAR respectively, the maternal and child health inequality trends are worrying.

**Health inequality: definition and measurement**

Health inequalities exist wherever and whenever there are unfair and preventable differences in people's health across social groups and between different population groups; they are most commonly related to socio-economic inequalities but can also be due to discrimination (Government of Ghana 2014; Zere et al 2012; WHO Commission on Social Determinants of Health 2008).

Inequalities exist in both developing and developed economies but specific to their local contexts. As Bartley (2007) and Nafziger (1988) asserted, socio-economic and health inequalities have always existed since the days of serfdom when the factors of production from the onset were inequitably distributed in favor of the Lords and to the detriment of the serfs.

Health inequality studies worldwide also show that people in the lowest wealth quintile experience the worst health outcomes (Buck and Maguire 2015; Olorunsaiye 2015; Marmot 2010). Thus, health inequalities exist in low, middle as well as high income countries (Bartley 2004, 2007). However, the form, scope and depth of health inequalities substantially differ according to their national contextual issues like wealth, health care accessibility, education and socio-cultural factors (Graham 2009; Mutangadura et al 2007).

**Social Determinant of Health**

Health as 'state of complete physical, mental and social well-being of an individual, and not merely the absence of a disease or infirmity' (WHO 1946 P.2) is one of the fundamental social resources to which all individuals, social and population groups have equal claim and right. This means the extent to which individuals, social group, population or geographical area experiences good health and well-being will depend on '…the circumstances in which people are born, grow up, live, work and age and the systems put in place to deal with illness' (WHO Commission on Social Determinants of Health 2008 p iii).  The more favorable these life-course circumstances are to individuals and population, the healthier they would be.

Unfortunately, these life circumstances are in turn determined by economics, social policies and politics which are not within the immediate control of individuals (WHO Commission on Social Determinants of health 2008; WHO 2016; Dahlgren and Whitehead 1991). Various researchers have thus explored the social health and health inequality factors (social determinants of health) using various models but the most widely used is the Dahlgren and Whitehead (1991)'s rainbow model of determinants of health as illustrated in Figure 1.1 below:

**Figure 1.1: Dahlgren and Whitehead (1991)'s rainbow model of determinants of health**
**Source: Dahlgren and Whitehead (1991).**

The central argument of the model is that health inequality in society pertains because individuals and group's level of health is connected to their socioeconomic level. This has heightened awareness that many health issues can be explained by social factors; thus economic, environmental and social inequality can determine a population's risk of ill-health, their ability to prevent sickness or their access to effective treatment. The model depicts the relationship between individuals, their environment and health. Thus, individuals at the center of health are surrounded by the various layers of influences on health and health inequality. These include individual lifestyle factors, community influences, living and working conditions and more general social conditions. The model has accordingly helped researchers to explore the relative influence of these determinants on different health outcomes and the interactions between the various determinants.

Ghana beyond 2015 is accelerating MCH and other public health care provision at the primary health level using the universal health coverage (UHC) approach. By this approach health equity indicators and targets are defined and being monitored to ensure that all people living in Ghana access quality MCH and other population-based and individual services according to their needs. Geographical access equity index is now actively monitored in terms of skilled provider availability ratios, supervised delivery ratios, tracer medicine availability and functionality of CHPS zones, among others. Attainment of UHC with equitable public health care is expected to move Ghana towards the attainment of its sustainable development goals (SDGs) targets by 2030 and narrow the health inequality gap between geographical areas and social groups.

**Problem Statement**

Despite more pronounced and widening maternal and child health inequalities separating the UWR from the AR and GAR, Ghana's HRH attraction and retention trend remains persistently highly skewed in favor of the latter (Ministry of Health-Ghana 2010; GHS and UNICEF 2011). This is also against the backdrop of a gross disproportionate share of HRH recurrent budget to the total recurrent health budget. Thus, whereas between 2003 and 2008, AR and GAR could record as high as 46% positive change in their medical staff situations, the UWR recorded a marginal 3% (GSS 2008). This reflects health professionals' persistent refusal of jobs in the north and existing professionals' high attrition to the south. The situation requires accelerated deployment and retention of skilled HRH and funds in UWR (Zere et al 2012) by Central government but this remains a mirage. Perennial huge geographical health care access inequities and inequalities in health and other wealth indicators, particularly maternal, neonatal and child health, thus persist with the UWR always in poorest health (Zere et al 2012; Mutangadura et al 2007; Olorunsaiye 2015).

Ghana's HRH Policy and Strategic Plan 2007-2011 accordingly aimed to address critical HRH management issues and effectively tackle health inequalities, particularly in maternal and child health. The health sector's mandate under the national development agenda (GSGDA 2010-2013) could then also be effectively executed (Ministry of Health-Ghana, 2007). HRH production priorities thus included increasing middle level cadres and skill-mix like Physician Assistants, Midwives, CHOs/Community Health Nurses (CHNs) and Technical Officers in disease control and nutrition to serve at sub-district and community/household levels.

The perennial mal-distribution was to be addressed through various equity measures. These included ensuring health professionals' postings are driven by geographical need and requisite incentives to help attract and retain skilled professionals in the north, rural and other

deprived areas targeting in particular Doctors, Midwives and Cadres mentioned above (Ministry of Health-Ghana 2007, 2014).

Further, the policy document was developed through national stakeholders' forum's recommendations on pertinent HRH issues impeding the health MDGs and overall national development. The main policy thrusts were increase HRH production, recruitment, and retention, equitable distribution and productivity increase through refining compensation and other incentive schemes, strengthened supervision and enhanced legislation and regulation; mobilizing other health-related professionals and improving personal emoluments decentralization (Ministry of Health-Ghana 2007).

The perennial HRH inequity challenges also cut across the health-related sectors in the UWR like education, food and agriculture, water and sanitation, among others.

Kuganab (2009) also observed that the HRH policy lacks internal and external coherence as there was inadequate consensus and agreement, given that major stakeholders like the unions were not part of the policy process. The approach had far reaching implementation difficulty implications given the varied and complex professional identities that power play to determine the actual policy outcomes (Ham 2009; Amstrong et al 2006).

For example, doctors, midwives and nurses have very strong professional identities and wield great deal of resource allocation power in their day-to-day duties. They are also the most critical HRH determining equity in quality maternal and child health care services and health outcome distribution (Dovlo 2007; Gupta et al 2011; Zere et al 2012). Attrition is highest among these cadres in UWR or north and other deprived areas. Additionally, the sector frequently experiences strike actions as they demand better conditions of service, though the highest paid, having the best career opportunities both home and abroad; and work mostly in

the endowed areas with far more extra income earning opportunities and good schools for children's education (Ghanaian-Times 2012).

A colonial legacy of inequality in spatial development and regional economic dominance in favor of the south thus persists and governments over the years have lacked the strong political will and economic courage to boldly correct this regional in-balance (Song sore, 2011 Nafziger 1988).

**Objectives of the Study**

Health of the Nation Reports, equity studies and health reviews always point to persistent health inequality gap between the three regions in the north of Ghana and the southern sector in favor of the latter; and between rural and urban, rich and poor populations (Ministry of Health-Ghana 2012).

**Main Objective**

The main objective of the study is to assess the potential of HRH policy to reduce health inequality in maternal and child health between the north and the southern sector of Ghana.

The specific study objectives are,

- Critically analyze the underlying factors determining health inequality between the Upper West Region and the Ashanti and Greater Accra Regions.
- Estimate the relative contributions of income, education and occupation factors or outcomes to the health inequality gap in maternal and child health care.
- Estimate the relative contribution of Ghana's HRH policy outcomes to the health inequality gap in maternal and child health care.
- Appraise evidence-based HRH policy implementation conditions and interventions that narrow the inequality gap in maternal and child health care.

**Rationale of the Study**

Effectively tackling a nation's health inequalities is possible. However, absolute governmental commitment to the values of equity in developing and ensuring enforcement of informed bold, cost-effective and sustainable policy interventions is required (Diderichsen 2010; Graham 2009). Further, such policy interventions must be contextualized for relevance and consistency with both upstream and downstream critical issues underpinning policy implementation success (Osei-Assibey 2014; Buck and Maguire 2015; Marmot 2005; Graham 2009). Similarly, the argument about contextualization is the absolute nub of this thesis: for Ghana, in respect of the maternal and child health services, the great bulk of evidence about the limited impact of investment in health care services may not apply. Rather, presently, investment in access to basic, skilled services is the crucial intervention. Thus, informed investments in crucial life-course public health care interventions targeting health-disadvantaged populations can then be monitored and evaluated for interventions' impact on methods to reduce risk of mortality (Graham 2009; Ministry of Health-Ghana 2000; PHE 2014; Buck and Maguire 2015).

Ghana made very good progress in economic growth and poverty reduction over the years particularly between 1990 and 2011 (Osei-Assibey 2014). National development plans also outline equity-focused policies and program interventions in health and other sectors like education, Food and agriculture, and employment targeting inequalities in health and other sectors. The goal is securing a just, fair and prosperous society for all living everywhere in Ghana (NDPC-Ghana 2010, 2015). Policy aims may not necessarily reflect the reality though (Kingdon 2011, 2015; Ham 2009).

Further, most health inequality studies tend to give prominence to individuals and groups' economic, education and occupation characteristics as social determinants of health inequalities, over health care. However, Ghana's context might still offer another opportunity

to fill an apparent knowledge gap in the Ghanaian context. For example, Buck and Maguire (2015 p.8) noted most studies agree that '…the contribution of health care, though important, is responsible for less than half of our health. The biggest contributor is the wide bundle of factors wrapped up in what is phrased "the wider determinants of health", those factors that are not health care, behaviors or genetics.' Nevertheless, the researchers also agree that the impact of health care on health could be more than exists presently. This is because the health care's 'compensatory effect could be delivered through systematic and scaled up interventions even given that the wider determinants have generated high risks of, or actual poor health…'(Buck and Maguire 2015 p 8-9). This suggests a plausible knowledge gap particularly that most of these studies were based on developed countries' experiences or context (Bartley 2004, 2007). For example, study results from Bunker et al (1995) demonstrated large impact for health care access because the study '…methodology demonstrated what is possible, if all health care that was effective was implemented' (Buck and Maguire 2015 p.9). The authors acknowledged the importance of this evidence and therefore the research context and methodology as studies are often used as an excuse for it being "too difficult" to tackle population health or inequalities through the health care system (Buck and Maguire 2015). Thus, what matters most in 'health' and health inequality reduction might be what is possible in a given context and time. It also means taking the 'what could happen' approach to assessing the influence of the determinants of health and health inequalities (Buck and Maguire 2015).

There is currently little or no reliable evidence in the Ghanaian context that explicitly tests the above plausible claim; whether increased geographical access to skilled life-course public health care providers in the UWR might be a more important determinant of maternal and neonatal health inequalities than education, income and occupation as 'wider determinants of health'.

The study rationale's premise is that, despite the good reduction in poverty levels in Ghana to 22% of its population (Osei-Assibey 2014; GSS, GHS, and ICF International 2015), free maternal delivery, free immunization services for pregnant mothers and under 5 children, the national health insurance and cash transfers to protect the poor; inequities and inequalities in maternal and child health remain more pronounced between the UWR and the AR and GAR (Zere et al 2012; GHS and UNICEF 2011; Osei-Assibey 2014). At the same time, the studies found that skilled human resources for health (HRH) alongside necessary funding in the north were critical if the health Millenium Development Goals (MDGs) 4 and 5 in particular would be achieved by 2015. A close study of national health development plans below also reveals the prominence, at least on paper, given to HRH issues aimed at addressing the perennial health inequities and inequalities particularly in maternal and child health between the north and south.

Indeed, Ghana, like other developing health systems, faced serious challenges meeting her health related MDGs. Ghana could not attain her health related MDGs by 2015; and was described in 2012 as having made good progress but at a pace that required practical acceleration of its health related MDGs if the targets would be achieved by end of 2015. For instance, evidence-based evaluations showed that the progress made in maternal and child health could not achieve the MDGs 4 and 5 targets. Figure 2.1 below shows Ghana's MDGs attainment levels at the end of 2012 and 2015 respectively.
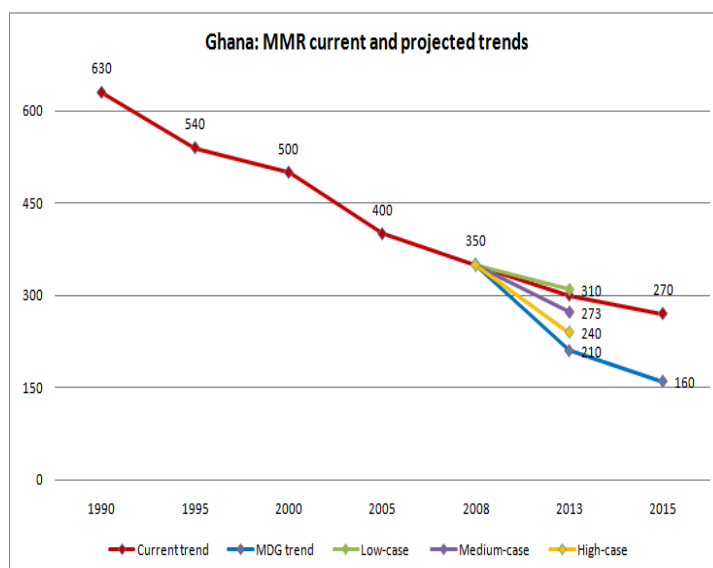
*Figure 1.2*: *Ghana: MMR Current and Projected Trends*
**Source**: **2010-2013 HSMTDP-Costing Exercise Report**

Meanwhile, as indicated above, human resource development and productivity is at the core of Ghana's long-term and medium-term development agendas as she entered the middle-income brackets by 2015. The Ghana Shared Growth and Development Agenda (GSGDA) 2010-13; GSGDA II 2014-17; the President's Coordination Program of national Economic and Social policies 2014-2020 and now the 40-year National Development Plan, among preceding plans, accordingly envision the health sector 'to have a healthy population for national development'….and 'where every Ghanaian will have the opportunity to live long, productive and meaningful lives'.

On the contrary, the major concerns of these development plans have persisted. These include large gaps in geographical access to health care due to inadequate and inequitable distribution of health workers and health infrastructure; low morale and motivation with high attrition rate among health workers; inadequate collaboration between the Ministry of Health and Ministry of Education training institutions and weak governance and accountability (Ministry of Health-Ghana 2007, 2010, 2014; NDPC-Ghana 2010, 2014).

Buck and Maguire (2015) argued that health inequalities can be impacted more positively if health inequality policy design and implementation processes satisfy some conditions including, but not limited to;

- Policy coherence- population health systems strongly integrating health care services with other public services and approaches to public health delivery.

- Austerity – health and wider government policy refocus on health inequalities

- Commitment/adherence (positive reaction to austere policy)

- Consistency – taking into account local area context factors (knowledge, history and experience) that no high level analysis can unveil; and which affect how the policy is translated at that level

This study in answering its research questions was also guided by the above criteria in determining: whether effective policy and intervention options of Ghana's HRH policy, more than education, income and occupational differences, might make the difference in reducing the health inequalities between the UWR and the AR and GAR, particularly maternal and neonatal health. Further, as Osei-Assibey (2014) observed, the gains in poverty reduction were eroded by a 4-percentage point. Some of the few narrowing health inequality indicators were consequential to balancing from worsening health outcomes within some previously better-off groups. These, according to the author, were due to Ghana's failure to practically target investments at the population segments that really need them. The question here also is whether practically Ghana invests equitably in its health priorities, compared to the other social determinants of health inequalities mentioned above. For example, health cuts across these other health related sectors. However, are their critical HRH issues being given the deserved and compelling investment attention to effectively implement evidence-based effective policy interventions? How might these reduce health inequalities between the UWR and the AR and GAR more than these other determinants?

Indeed, the United Nation's socio-economic and health related MDGs/SDG targets, signed onto by nations, aim at creating the enabling overall environment for even distribution of the social determinants of health. This includes equal distribution of health within national contexts and, by extension, international context (UN 2000).

**The Research Question**

Ghana's trans-generational health inequality trends favor AR, GAR and sister southern regions. These have disproportionate share of the nation's resources, accumulated health advantage, economic growth and well-being to the unfair and preventable disadvantage of UWR and its sister northern regions (Osei-Assibey 2014; Nafziger 1988; Songsore 2011).

The overarching question then is why health outcomes inequality gap between UWR on one hand, and AR and GAR on the other, continues to increase despite equity-based policy interventions? In addition, there is nominal growth in expenditure on health care, overall national economic growth and poverty reduction.

The specific guiding questions to help generate valid qualitative evidence and contribute knowledge to existing body of knowledge are;

1. What factors account for the health outcomes inequality between the Upper West region and the Ashanti and Greater Accra regions?

2. Specifically, how do income, education and occupation factors contribute to the health inequality gap in maternal and child health care?

3. OR how does Ghana's HRH policy contribute to the health inequality gap in maternal and child health care?

4. What human resource policy implementation conditions and interventions might help reduce the inequality gap in maternal and child health care?

The four guiding questions are aimed at identifying the root causes of the inequality gap that are amenable to policy action and their relative contributions to the problem.

The guiding research questions reflect a proposition that in Ghana's context and maternal and child health, specifically, there may be a pivotal role of human resources for health (HRH) in the health delivery system. Further, the study is founded on a view for, in this case, effective

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HRH policy enforcement to make important positive impact on low density of doctors and midwives and the poorer health outcomes of disadvantaged populations within the Ghanaian context.

**Researcher's positionality**

Both qualitative and quantitative methods of inquiry were employed in this study of my own organization and social group or society; hence my positionality as a 'member' conducting insider qualitative research (Greene 2014; Ross 2017; Naples 2003). According to Sikes and Potts (2008) insider research originated from the disciplines of anthropology and sociology; but its relevance cuts across several other disciplines (Greene 2014). As a Senior Health Manager interviewing fellow health professionals, other key health actors and health clients on emotion-driven contemporary subject as policy effectiveness in mitigating geographical inequality in MCH in the north and south, I find myself as both subject and object of the research (Green 2014).

Thus, my role as the principal investigator and life trajectory identify me with a number of the contexts being researched. First, I was born a native of the Upper West Region; at a time MCH services and resources were virtually unavailable in my locality, unlike the south. Poverty and deprivation (in my childhood) caused the family to relocate in the endowed Ashanti region to access greener pastures (economic, children's education and health care). We were then privileged to annex the culture and privileges of the south to our socio-economic advantage. For example, poverty and tradition back home would have denied me of education but I got educated and employed as a health manager now with 28-years of rich work experience acquired from both the north (Upper West and Upper East Regions) and south (Eastern, Central and Greater Accra Regions). Thus, I share a common understanding

of the north-south divide in regard to health inequality, particularly MCH, with my research participants (Greene 2014; Ross 2017).

My own doctorial study is exploring, with the participants, what the fundamental determinants are and their relative contribution to the long standing and widening geographical inequality in MCH in the north and south.

Inequalities in MCH also carry with it gender concerns in that vulnerable, minority and marginalized groups within cultural, political, social and economic contexts are the most disadvantaged. Thus, the nonattainment of the MDGs 4 and 5 and the paucity of evidence base on the subject being researched have stimulated stakeholder enthusiasm and commitment to deeply interrogate the phenomenon and expand the evidence to inform appropriate mitigating policy actions.

The study exemplifies as insider research as I not only hold prior intimate knowledge and understanding of the groups I wish to study as the principal investigator; but also, a member of the group (s) (Merton 1972; Greene 2014) e.g policy maker and implementer, health practitioner, health client and native of one of the study regions etc. In contrast, an outsider researcher has no prior intimate knowledge and understanding of the group (s) being researched (Merton 1972). Chavez 2008 and Banks (1998) however argued that the conceptualization of insider-outsider researches as dichotomous is a false one in that both insider and outsider researchers have positionality and other methodological issues to deal with (Greene 2014); hence the researcher's role must be conceptualized as a continuum (Trawler 2011; Breene 2007).

Green, (2014) and Ross (2017) underscore the paucity of the literature exploring the impact of methodological implications on the research findings. I recognize that there are some possible methodological insights and challenges that may arise in conducting insider research

(Greene 2014). For example, the positionality and experiences of the insider researcher in relation to the participants may influence what stories they tell, how the stories are told and the narratives that the researcher produces and shares (Greene 2014; Ross 2017).

Depending on the cultural or professional values and norms of both the researcher and study participants, my positionality shifted as appropriate in order to keep me identified with the participant's position (Greene 2014; Ross 2017; Merriam et al 2001). For example, gaining access, establishing rapport, diffusing power distance and establishing collegiality between the researcher and research participants formed crucial part of the researcher's reflective and reflexivity processes throughout data collection, analysis and sharing of participants' narratives.

Unlike the positivist researchers who label insider research as fraught with the researcher's subjectivity and bias, other research traditions have extensively documented several benefits and advantages of insider qualitative research (Ross 2017).

Several insider qualitative research techniques and tools are however available to facilitate, rather than hinder, the process of the telling and sharing of participants' narratives (Greene 2014). I availed myself of these methodological advantages and skills, through training and the pilot research conducted, to mitigate the potential risks of ethical implications and bias; and increased the trustworthiness and validity of the data gathered (Green 2014; Ross 2017). For example, I gained field access speedily and intimately (Chavez 2008) employing the right channels and norms of both community and organizational entry. Researcher acceptance was facilitated by the researcher's membership and creation of empathy and participant's comfort throughout the conversations taking into account their emotions and values (Ross 2017; Dwyer & Buckle 2009).

**Conceptual framework**

This study was designed, informed by the Dahlgren and Whitehead, (1991) model and related synthesized versions, using the explanatory, interactive and action-oriented (EIA) as a conceptual framework which is discussed in detail in Chapter three. The EIA is intended as a general guide to policy makers to help explore which of these determinants might explain in particular, neonatal and maternal mortality inequalities between the UWR, experiencing the worst of these, and the AR and GAR in Ghana's context; and their interrelationships. My focus however is on attaining health equity in health care resources and health personnel resourcing; what policy investment options and program interventions might effectively even health care accessibility and inequality reduction.

**Overview of Thesis**

The rest of the thesis is organized into six other chapters. Chapter two is an overview and situational analysis of Ghana to provide the research context. Chapter three reviews the theoretical and conceptual perspectives of the social determinants of health and health inequalities in relation to the life-course approach to health and inequality reduction; and the study's adapted EIA conceptual framework. It postulates as a guide to policy makers, sustainable health inequality reduction through equality of geographical access to integrated public health care and related public services on life-course basis. It recognizes health as beyong health services and therefore intersectoral and thus could guide effective intersectoral and and health stakeholder engagement on tackling MCH inequalities. Chapter four outlines, with justification, the study methodology and methods employed to operationalize the research questions. The research strategies are qualitative and quantitative using convergence mixed methods with triangulation approaches and techniques. Chapter five presents the study results matrix of the quantitative and qualitative studies. Thus, it presents analysis and interpretation of the quantitative survey results using descriptive statistics, chi-square test, and hierarchical logistic regression and hierarchical negative binomial regression techniques

to analyze predictors, and probe the determinants of incidence and total neonatal deaths (as a count variable) per woman of reproductive age. The results established that health inequality between the north (UWR) and the south (AR and GAR) of Ghana is statistically significant; and also support the study hypothesis. The relative contribution of each of the other determinants of health and health care access, respectively, to the MCH outcome inequalities between the two geographical divides was also suggested by the regression analysis results. This was supported with insights from interviewees and separate focus groups of health professionals and health clients. Insights into contextual conditions, high impact HRH policy interventions and ways to achieve their effective enforcement at all levels of the health delivery system to increase geographical accessibility and utilization of skilled MCH Providers were also provided? Thus, the qualitative study results were triangulated with the quantitative evidence using relevant quotes to validate the study conclusions and evidence. Chapter six discusses the quantitative and qualitative results; and how Ghana's human resource for health policy interventions considered contextually innovative and cost-effective could reduce the neonatal and maternal mortality inequality gaps. The thesis concludes with chapter seven presenting the summary of study, conclusions and policy recommendations and interventions that can help reduce MCH inequalities between the two geographical areas; and some areas for future research.

**CHAPTER TWO- GHANA: CONTEXT AND SITUATIONAL ANALYSIS**

**Introduction**

Chapter one introduced Ghana as grappling with trans-generational inequalities, particularly in maternal and child health, between the UWR in the north and the AR and GAR in the south. This circumstance prevails notwithstanding the various socio-economic, health and political reforms and developmental plans implemented successively to address inherent challenges identified. It also does not reflect the accelerated economic growth and poverty reduction, political transformation and health gains chalked, particularly between 1990 and 2011(Osei-Assibey 2014; Songsore 2011).

This chapter presents an overview and situational analysis of Ghana to provide the research context. It outlines briefly, the historical background of Ghana's colonialism, decolonization, military rule and democracy as well as recent developments regarding political stability and economic growth. The chapter also discusses some demographic and health characteristics of Ghana including population based data, its MDG and new SDG targets and challenges like human immune-deficiency virus (HIV) and women's position in society. The chapter closes with an overview of Ghana's recent updated policy response to reduce maternal mortality rate (MMR) and neonatal mortality rate (NMR) and reduce geographical inequalities

**Overview of Ghana**

**Geography**

Ghana is located in the West African sub-region of sub-Saharan Africa. It is bounded in the north by Burkina-Faso, in the south by the Gulf of Guinea, in the west by Cote d'Ivoire and in the east by the Republic of Togo. It spans a total land area of 238,500 square kilometers and geographic coordinates of 800N and 200W (CIA World Fact Book 2017). It has an estimated population of 28 million people (2017 est.) at a national average growth rate of

2.2%. Ghana is divided into ten administrative regions that span across three main ecological zones namely the hot dry savannah belt in the north where the **UWR**, together with the Upper East and Northern regions, is located; the middle forest belt where the **AR** is located; and the coastal belt, the location of the **GAR.** The last two ecological areas also constitute the seven southern regions. Ghana's ecological and demographic dynamics come with key environmental issues which have considerable health implications. These include the recurrent drought in the north which severely affects agricultural activities; deforestation; overgrazing; soil erosion; poaching and habitat destruction which threatens wildlife populations; water pollution; and inadequate supplies of potable water particularly in the rural and deprived regions in the north.

**Brief history: colonialism, decolonization, military rule and democracy**

**The Colony**

Ghana was earlier named the Gold Coast by European colonizers and explorers because of the extensive deposits of gold they found between the 15th and 19th century AD (Anaman 2006). According to Anaman (2006) the large gold deposits and other minerals riches of the country generated intense interest and competition by European powers for coastal commerce including the extensive slave trade. The coast of Ghana has the majority of forts and castles built by the European political authorities and traders in West and Central Africa from the 15th to 19th century AD suggesting their intense competition for resources in Ghana during the colonial era (Anaman 2006).

Ghana was colonized by Britain in the 19th century, after the Portuguese, Dutch, Danes and the French in the 15th century, signing a pact of cooperation with the kings or paramount chiefs of the coastal states in 1844 (Anaman 2006). Under the Treaty, Britain was allowed

limited judicial powers in cases of murder and robbery. However, as from the 1850s, such powers were arbitrarily expanded by Britain until the1874 proclamation of the Crown colony bringing these coastal states and other states south of the river Pra under formal British rule (Anaman 2006). The Ashanti Kingdom was completely defeated and incorporated as the second component of the colony in 1901 whilst the northern territories (comprising the present three northern regions) became a British protectorate in 1902. The fourth component of the colony, the British Trans-Volta Togoland and former German colony, was incorporated into Ghana in 1956 following the United Nation's referendum.

Accra became the capital of the colony. Well-endowed in gold, cocoa as cash crop and timber from its forest belt (all located in the AR and GAR), the colonial administration concentrated industry and other socioeconomic developmental activities in the two southern zones (Songsore 2011).

**Colonial Health Services**

Education and health development were concentrated in the south. Organized health services formed part of most colonial services and financed by the colonial powers. Services provision initially targeted only the needs of the military, government officials and settlers but later extended to the local populations in order to address communicable diseases likely to spread to the expatriate population (Mills 1998). Missionaries also built up health services for the local population as part of their mission to spread Christianity in Africa and also out of genuine concern for the populations' welfare (Mills 1998). Thus, in Ghana, for example, government health service development dates back to the late 1880s with the establishment of the Gold Coast Medical Department (Mills 1998). The services also remained primarily curative until the early twentieth century when colonial health policy, for the first time, was expanded to cover the local population and also preventive medicine (Mills 1998).

**Decolonization**

A decolonized Gold Coast/Ghana dates back to the post world war II era when elite Gold Coasters including Dr. Kwame Nkrumah, the first president of the Republic of Ghana, began to envision the future of a decolonized Ghana/Africa (Ahlman 2010; Gebe 2008). Various political movements and social processes by this elite group (mostly merchants) began in Europe and America in the late 1940s. The first political party, the United Gold Coast Convention (UGCC) was thus founded by J.B. Danquah on 4th August 1947 with Dr. Kwame Nkrumah as the General Secretary.

The political movement was to assure their commercial interests, in the face of unfair colonial practices, culminating in their demand for self-governance from the mid1950s (Guti 2015; Ahlman 2010; Gebe 2008). Ideologically, the UGCC wanted self-governance "gradually" whereas her General Secretary wanted it "now". Dr. Nkrumah's ideological differences caused him to break away from the UGCC to form his Convention People's Party (CPP) and later got imprisoned by the colonial governor for his political radicalism. However, the CPP swept the three general elections organized by the colonial government in 1951, 1954 and 1956 to have a local Ghanaian Prime Minister, Dr. Kwame Nkrumah as Leader of Government Business (Anaman 2006). With the incorporation of the British Togoland in 1956, the colony on 6th March 1957 gained full independence under the name Ghana.

Ghana's decolonization, as the first nation in sub-Saharan Africa to gain independence from European colonial powers, has been viewed by many as a model for peaceful and orderly gradual transfer of power from European to African hands (Ahlman 2010; Anaman 2006). Two general elections conducted in 1960 and 1964 on Ghana as a Republic and one-party

state governance, respectively, added to the country's democratic governance profile under Dr. Nkrumah and the CPP government.

**Growth and Developmental Prospects**

The first Republic of Ghana flourished with massive state investment in accelerated infrastructural development and industry. For example, roads and railways, schools and hospitals and the historic power generating dam at Akosombo set the tone for accelerated industrialization and socio-economic growth. These developments were however concentrated in the Accra and Ashanti regions to the neglect of the northern territories.

The rapid industrialization agenda was largely stimulated by the favourable global market prices for Ghana's cocoa, gold and timber as the world's number one cocoa producer/exporter. Anaman (2006) asserted that political stability and export are statistically major determinants of long-run economic growth in Ghana under both civilian and military governments and with or without structural adjustment programmes (SAP). The assertion thus challenges the claim by some researchers that SAP (conditionality of international lending organizations) stimulates economic growth. Anaman (2006) further argued that SAP in the past sometimes contributed to political instability in Ghana by creating enabling conditions for military coups.

After 1958, however, Ghana began to encounter enormous economic and political challenges under Dr. Nkrumah's dictatorship. Dr. Nkrumah also oriented Ghana towards the Soviet Union and China and autocratically ruled all aspects of Ghana (Gebe 2008). This was consequential to unfavorable global market prices for cocoa, Ghana's heavy indebtedness to the giant American company, Valco regarding the huge Akosombo dam construction, and widespread corruption (Horton 2001). Cost of living soared and the average Ghanaian experienced hardships resulting in general unrest and political protests against the Nkrumah

government. The president reacted by arrest and imprisonment, without trial, all political protestors against his repressive government through the unpopular Preventive Detention Act (PDA) in 1958 (Horton 2001; JusticeGhana 2015). The PDA gave him unlimited powers to gag all dissent and suppress all opposition to his repressive regime (JusticeGhana, 2015). Thus, coupled with the economic hardships, Dr. Nkrumah became unpopular at home but, internationally, still a giant on account of his visionary leadership for a totally liberated (from colonialism) and united Africa. Horton, (2001) argued that Ghana steadily collapsed during the first Republic and President Nkrumah was described by his biography writer as an "evil genius" African dictator who sacrificed Ghana for Pan Africanism.

**Military Rule and Return to Democracy**

Kwame Nkrumah's growing domestic unpopularity and anti-western political ideology culminated into the first coup d'état on 24th February 1966, while he was on a state visit in Beijing and Hanoi. The first military regime, the National Liberation Council (NLC) returned the country to democracy in October 1969 through general elections that ushered in Prime Minister, Dr. Kofi Busia's Progress Party (PP) government. The second Republic was also terminated in January 1972 and until September 1979 Ghana was under three different military regimes. These are the National Redemption Council/Supreme Military Council (SMC), under General I.K Acheampong and the SMC's internal counter-coup born SMC II under Lt. Gen. F.W.K. Akuffo; and the Armed Forces Revolutionary Council (AFRC). The AFRC under Flight Lt. Jerry John Rawlings between June 4th 1979 and September 1979 returned the country to democracy through multi-party general elections. The third Republic was thus ushered in under President Dr. Hilla Liman's People's National Party (PNP) government. Unfortunately, the third Republic was short-lived with the 31st December 1981revolution led by Flight Lt. Jerry John Rawlings.

Thus, for nearly one and half decades (1979-1992) Ghana was under the military rule of Rawlings' Provisional National Defence Council (PNDC). Ziankahn Jnr. (2011) asserted that the misrule, coupled with misuse of the military as instruments of fear against their citizens by African politicians, account for Africa's coups and counter-coups and, most often, the related civil wars. The evidence was the outcome of a study involving Ghana's West African neighbours, namely Nigeria, Cote D'Ivoire and Liberia.

The coup leaders and Heads of States of the military regimes in Ghana cited widespread corruption and socio-economic injustice to legitimize their military interruption of democracy. According to Ziankahn Jnr. (2011), the sub-region's socio-economic and political institutions got devastated. Also, the need for an integrated and classless society following these (West) African countries' decolonization and post-independence between 1957- 1960 became a mirage, for most Africans (Ziankahn Jnr. 2011).

According to Aidoo (2005), Ghana's post-independence era was characterized by military dictatorship, unstable democracy and economic under-development. For example, the elites were politically marginalized hence could not participate in the governance processes of the state (Aidoo 2005). Economically, the masses were also marginalized with general dissatisfaction regarding the untold economic hardships and military coercion and suppression. Aidoo (2005) found that the political and economic exclusion of the elites and the masses was also explained by the socially structured governance systems that obtained since the colonial era.

In other words, the western-educated elites who championed Ghana's decolonization processes, failed to obliterate the economic exploitation, social class and political dictatorship systems that characterized the colonial and post-independence eras. For example, by 1964 President Nkrumah sidelined the constitution and governed Ghana as a one-party state (Gebe

2008; Aidoo 2005). His radical domestic and anti-western foreign policies brought the country into confrontation with America, for instance, and impacted negatively on its economic growth and political development. For example, the situation necessitated drastic economic and foreign policy changes after his regime was toppled in 1966 (Gebe 2008).

Ghana's decolonization and post-independence governance structures and processes were also not gender-sensitive. For example, women's participation and involvement in governance either lacked or extremely marginalized. This circumstance was, arguably, legitimized by the nature of socio-cultural norms/structures that obtain in some ethnic groups or cultures characterized by male-dominated roles (Adepoju 2005). These norms alienate women's natural rights to participate in such important decision-making processes, even in matters affecting their health and socio-economic well-being (Adepoju 2005).

**Political Stability and Economic Growth**

The map of Ghana (figure 2.1) below depicts the confirmed boundaries of Ghana at independence to present date; and the locations of the three study regions (marked pink) of the Upper West, Ashanti and Greater Accra namely the savanna, middle and coastal belts respectively and the two study districts in each region (marked light green).
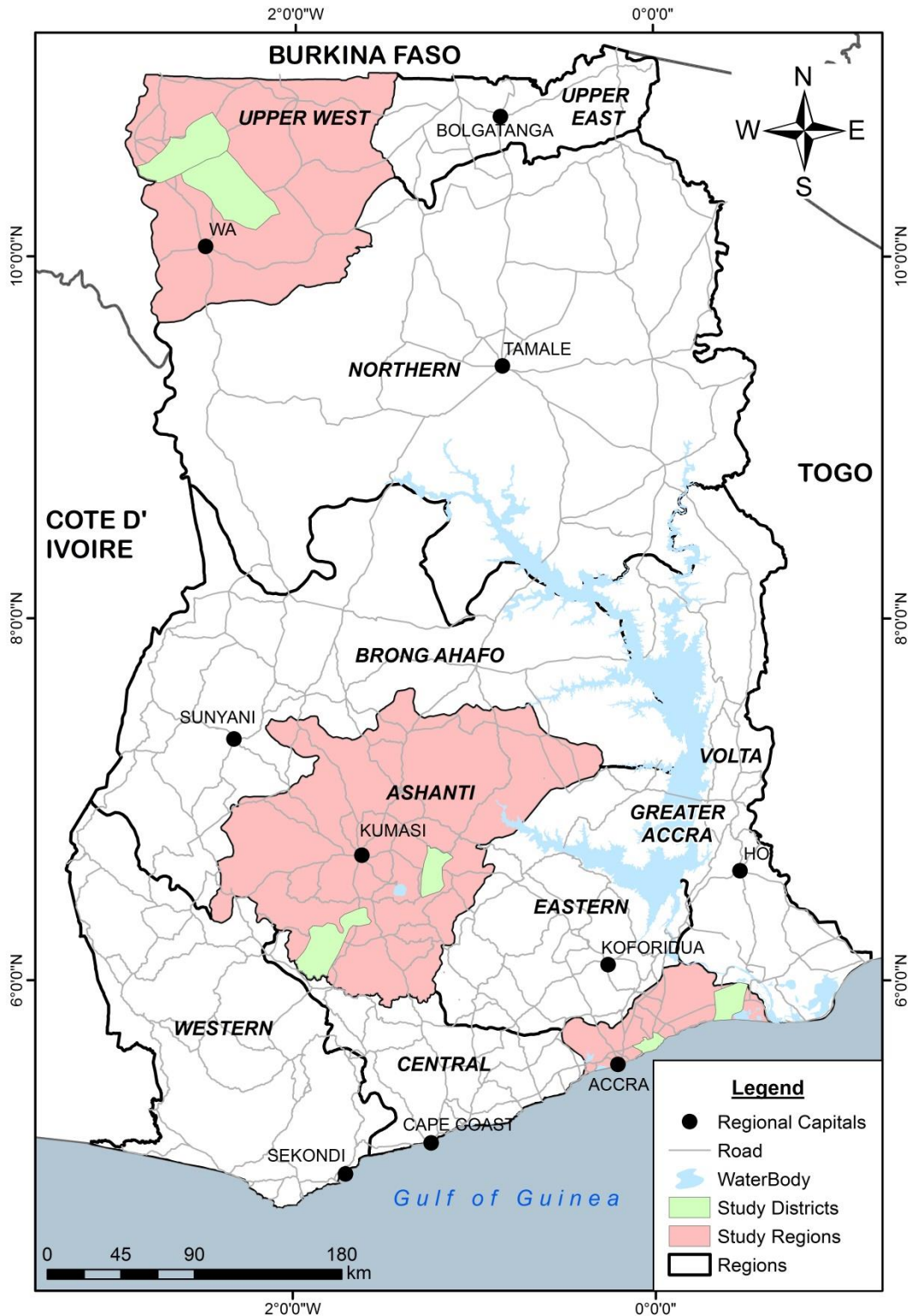
*Figure 2.1*: **Map of Ghana: study sites and border Countries**

Continuing mounting domestic and international pressures on the Flight Lt. Rawlings' long

military rule paid off with marked political transformation through the development of the

historic 1992 Constitution of Ghana. Ghana has since 1992 thus experienced very stable

democracy having had five successful successive multi-party general elections and succession of civilian governments. Political stability indeed dates back to 1982 following the last coup in December 1981and has stimulated Ghana's economic growth and development (Anaman 2006).

For example, Ghana was a country of immigration in the early years after its 1957 independence, attracting labor migrants largely from Nigeria and other neighboring countries to mine minerals and harvest cocoa; thus, immigrants composed about 12% of Ghana's population in 1960 (CIA World Fact Book 2017; Adepoju 2005).

Ghana's economic profile was well-articulated by Osei-Assibey (2014 p.2) in a national inequalities briefing paper as

"Ghana's economic growth rate averaged about 7% between 2000 and 2011 and today Ghana has one of the highest GDPs per capita (USD 1,580) in West Africa. In 2011, Ghana not only joined the ranks of lower-middle income countries but had one of the fastest economic growth rates (14.4%) in the world. The expansion in the economy has coincided with an almost halving of poverty between 1992 and 2006. Successive national living standards surveys conducted between 1992 and 2006 show that monetary poverty significantly reduced from 51.7% in 1992 to 28.5% in 2006. Both the depth of poverty and the number of poor all declined substantially. The number of poor reduced from 7.9 million people in 1992 to 6.3 million people in 2006. Thus, while the population grew by 6.9 million between 1992 and 2006, the number of poor declined by 1.6 million people- an important achievement that makes it very likely that the country will achieve the MDG 1 target of halving poverty by 2015. However, the evidence suggests that the gains achieved thus far have not been evenly distributed across regions, localities, gender and ability".

Indeed, Ghana attained its MDG 1 target in 2015 reducing its poverty rate by half. Its gross domestic product per capita also continued to increase from $1,580 in 2011 to $1,656 in 2015 and $1,707.70 in 2016 (WHO 2015). Total expenditure on health per capita similarly improved significantly to $145 in 2014 while life expectancy at birth rose from 45 years in 1960 to 61 and 64 in 2015 for men and women respectively.

**Demographic and Health Characteristics of Ghana**

Ghana has a young population. Thus, the populations under age 15 and above 60 constitute 38% and 5% respectively; and a 3.9 total fertility per woman (WHO 2015). The proportion of young population further increases to 57% for the 25years and below age bracket. Simultaneously, increased life expectancy due to better health care, nutrition, hygiene and reduced fertility, increased Ghana's share of the elderly persons. Thus, Ghana's proportion of persons aged 60 and above is among the highest in sub-Saharan Africa (CIA World Fact Book 2017).

In addition, though poverty has declined in Ghana, it remains pervasive in the northern regions which are susceptible to droughts and floods and has less access to transportation infrastructure, markets, fertile farming land, and industrial centers. The northern regions also have lower school enrollment, higher illiteracy, and fewer opportunities for women (CIA World Fact Book, 2017).

The high dependent population also presents child, adolescent and maternal health as well as economic challenges. These include high unemployment among the youth, high teenage pregnancies, and unsafe abortions, maternal and neonatal deaths as well as HIV and other sexually transmitted diseases among these vulnerable groups (GSS, GHS & ICF 2018). According to the UNDP-NDPC 2015 MDG report, there is a declining trend in Prevention of mother to child transmission (PMTCT) service coverage particularly HIV-positive pregnant

women accessing anti-retroviral treatment (ART). Thus, PMTCT is the commonest mode of passing HIV from mother to child since the risk associated with mothers without anti-retroviral (ARVs) treatment is between 15-45% (UNDP-NDPC 2015). Key challenges to reduction in HIV prevalence include, but not limited to risky behavior among young people, power relations disadvantageous to women and erratic supply of ARVs.

The high rural-urban migration trend (53% urban population) in search of jobs, education and better living conditions further account for some of these socio-economic and health challenges. The table below however places Ghana ahead of its West African neighboring countries Togo, Cote D'Ivoire and Burkina Faso in some health and quality of life indicators. For example, Ghana's life expectancy at birth was 63 years in 2013 compared to 58 years, 53 years and 59 years for Togo, Cote D'Ivoire and Burkina Faso respectively (WHO 2015).

**Table 2.1: Demographic and Health indicators- Ghana and Sister West African Countries (1990-2013)**

| Indicator/Country Statistics | Ghana | Togo | Cote D'Ivoire | Burkina Faso |
|---|---|---|---|---|
| Population (2017 est.) | 27,499,924 | 7,965,055 | 24,184,810 | 20,107,509 |
| Pop aged under 15 | 38 | 42 | 40.2 | 46 |
| Pop 15-59 | 56 | 54 | 55.5 | 51 |
| Pop above 60 | 5 | 4 | 3.5 | 4 |
| Pop living in urban areas (2017 est.) | 55.3 | 41 | 55.5 | 31.5 |
| Total fertility per woman | 3.9 | 4.38 | 3.38 | 5.71 |
| Life expectancy at birth | 63 | 58 | 53 | 59 |
| Neonatal mortality rate | 29.3 | 30.4 | 37.5 | 26.9 |
| Infant mortality rate | 52.3 | 55.8 | 71.3 | 64.1 |
| Under 5-yr old underweight (2014 est.) | 11% | 16.2% | 15.7% (2012) | 19.2% |
| Maternal mortality rate (2015 est.) | 319/100,000 | 368/100,000 | 645/100,000 | 371/100,000 |
| Healthy life expectancy at birth F/M (2015est.) | 56.0/54.7 | 53.3/52.3 | 47.6/46.5 | 52.7/52.4 |

**Source: Country profile and global health statistics by WHO and UN Partners, 2015 & CIA Fact book, 2017**

Both female and male Ghanaians also have longer healthy life expectancy years than their Togolese, Ivorian and Burkinabe counterparts. In all situations, the female Ghanaian lives longer than their male counterparts.

**Ghana: From MDGs to New SDG Targets**

Ghana made good progress towards achieving her MDGs 4, 5 and 6 targets of reducing child mortality by two-thirds, reducing maternal mortality by three quarters and halting and reversing the incidences of HIV, tuberculosis (TB) and malaria respectively by 2015. According to GSS, GHS & ICF (2018) child mortality trend from 1990 to 2017 indicates that Ghana failed to achieve her 40/1000live births child mortality rate target as shown in figure 2.1



Trends in childhood mortality, 1988-2017
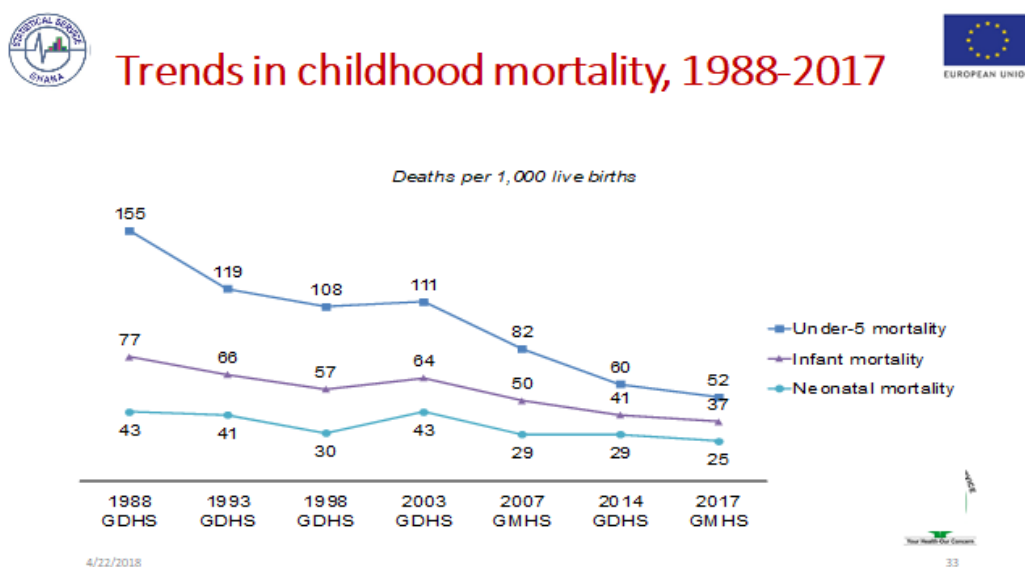
**Figure 2.2: Trend in Ghana's Childhood mortality: 1988-2017**

WHO (2015) and UNICEF, WHO, UN and World Bank (2015) also affirm that Ghana and its neighboring West African countries of Burkina Faso, Togo and Cote D'Ivoire made good progress but insufficient to meet their MDG targets. Tables 2.2A &B below show the status of MCH in Ghana and sister countries as of 2013.

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**Table 2.2A: Country Progress towards the Achievement of the Health-related MDGs 4 & 5**

| | Target 4A: Reduce by two-thirds,1990-2015, the under-five mortality rate | | Target 5A: Reduce by three quarters, 1990-2015, the maternal mortality ratio | | Target 5B:Achieve, by 2015, universal access to reproductive health | |
| --- | --- | --- | --- | --- | --- | --- |
| | % CMR reduction (1990-2013) | % Measles immunization coverage among 1-yr old ( 1990-2013) | % reduction in MMR (1990-2013) | % births by skilled personnel | % antenatal care coverage: at least 1visit | % unmet need for family planning |
| Target | 67 | 90 | 75 | 90 | 100 | 0 |
| Ghana | 39 | 89 | 50 | 67 | 96 | 37 |
| Togo | 42 | 72 | 32 | 59 | 73 | 37 |
| Cote D'Ivoire | 34 | 74 | 3 | 57 | 89 | 22 |
| Burkina Faso | 51 | 82 | 48 | 66 | 95 | 25 |

**Table 2.2B Country Progress towards the Achievement of the Health-related MDGs 6 & 7**

| | Target 6A: Have halted by 2015 and begun to reverse the spread of HIV/AIDS | Target 6C: Have halted by 2015 and begun to reverse the incidence of malaria and other major diseases | Target 7C: Halve, by 2015, the proportion of the population without sustainable access to safe drinking-water and sanitation | |
| --- | --- | --- | --- | --- |
| | % reduction in HIV incidence, 2001-2013 | % reduction in mortality rate of tuberculosis (among HIV-negative people), 1990-2013 | %reduction in proportion of population without access to improved drinking-water source,1990-2012 | %reduction in proportion of population without access to improved sanitation,1990-2012 |
| Target | > 0 | 50 | 50 | 50 |
| Ghana | 79 | 90 | 72 | 8 |
| Togo | 83 | <-50 | 25 | -2 |
| Cote D'Ivoire | 76 | 70 | 17 | 8 |
| Burkina Faso | 47 | 66 | 68 | 12 |

**Source: World Health Statistics, 2015**

Ghana emerged from the MDG era poised to ensuring a 'leave no one behind' in its

sustainable development agenda 2030 (GSS, GHS & ICF 2018). Attaining universal health

coverage requires addressing the health system holistically. As such Ghana's health sector is going through a comprehensive set of reforms aimed at improving both physical and financial access to health services (Saleh 2013). Public funds are used to finance the population's use of both public and private health providers; therefore, the National Health Insurance Scheme (NHIS) is one major step forward. Reforms in the area of human resources for health helped reduce attrition (external brain drain) especially of physicians (Saleh 2013). For instance, decentralization and policy of retention and use of internally generated insurance funds have ensured better availability of drugs and incentives for staff in health facilities (Saleh 2013).

Ghana's SDG targets attainment is also to be driven by data relevance (for policy), quality and usage in evidence-based decision-making at all levels of national development (GSS, GHS & ICF 2018). This in turn is driven by data production, data segregation and data ecosystem interoperability and effectiveness. Data segregation for instance will ensure that the developmental needs and outcomes of all population segments particularly the vulnerable groups and geographical areas are clearly delineated, targeted and tracked.

The Ghana's Data for Sustainable Development Forum in April 2017 thus reiterated the government's commitment to work with all stakeholders to effectively monitor and address existing gender and geographical inequalities using policy relevant data (GSS 2017). The Ghana Statistical Service accordingly promotes the SDGs in national planning and data collection. The GSS 2016 National Strategy for the development of statistics aligned with the SDGs is one such government response to major data gaps in the SDGs particularly on disaggregated data.

Ghana's health SDG targets are set out in table 2.3 below.

**Table 2.3: Health SDG- Goal 3: Ensure healthy lives and promote well-being for all at all ages**

| Goal | Global SDG Target By 2030 | Ghana's SDG Target | |
|---|---|---|---|
| | | Baseline (2015 MDG) | SDG   Target |
| 3 | Maternal mortality ratio reduced to less than 70 per 100,000 live births | 358/100,000live births (2015 projected from 380/100,000 in 2013) **Target: 185/100,000** | Less than 70/100,000live births |
| | End preventable deaths of newborns and children under five years; and reduce neonatal mortality to at least as low as12 per 1,000live births and under five child mortality to least as low as 25 per 1,000live births | 60/1,000live births (2014 under 5 child mortality). **Target: 40/1000** | NNMR- 12/1000live births and<br><br>Under 5 Mortality- 25/1,000 |
| | End the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases | Increase in HIV prevalence halted and trend reversed. New infections declined by 70% (2009-2012) | End AIDS, TB and malaria epidemics; combat hepatitis, water-borne diseases and other communicable diseases |

Ghana also subscribes to the six remaining global targets of the SDG 3. In addition, the remaining 16 other goals either also relate directly or indirectly to health. For instance, the first two targets under SDG 2 directly deal with improved nutrition outcomes for all particularly the vulnerable groups including infants. Thus Ghana, by 2030, targets to end all forms of malnutrition including achieving, by 2025, the internationally agreed targets on stunting and wasting in children below 5 years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons.

Similarly, Goal 5 pursues gender equality, targeting among other things, ensuring universal access to sexual and reproductive health and reproductive rights as agreed in accordance with the Programme of Action of the international Conference on population and development and the Beijing Platform for Action and the outcome documents of their review conferences. In addition, Ghana's SDG 10 targets include but not limited to, by 2030, empower and promote

the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion, or economic or other status.

Within the national context of SDGs implementation, the health sector in its medium to long term development planning, works with four strategic objectives and a total of thirty-five priority strategies to address key MCH and related issues. These are outlined in table 2.4 below

**Table 2.4: Health sector strategic objectives and Priorities**

| SDG Strategic Objective & Issues | Priority Strategies |
|---|---|
| 1. Ensure Sustainable, Equitable and Easily Accessible Healthcare Services (Universal Health Coverage)<br><br>**Issues**: Huge gaps in geographical access to quality health care; Wide gaps in health service data; Inadequate and inequitable distribution of critical staff mix; Inadequate capacity | Scale up CHPS implementation; strengthen Sub-district health services (human resources, Funding & Equipment); implement staffing norms to improve equity ( doctors Physician Assistants, Midwives); improve access to specialist services at the regional & district levels; increase access to quality emergency healthcare services (pre-Hospital and hospitals); promote use of ICT and e-health strategies in health care delivery; ensure gender mainstreaming in the provision of health services; and strengthen the referral system. |
| 2. Reduce Morbidity, Mortality and Disability<br><br>**Issues:** Increasing morbidity, mortality and disability due to non-communicable and emerging diseases despite investment in maternal, child health and nutrition | Strengthen maternal, new born care and adolescent health services; Review and Scale-up Regenerative Health and Nutrition Programme (RHNP); Strengthen public health emergency preparedness and response; Implement the Non-Communicable Diseases(NCDs) control strategy; Strengthen the management of communicable diseases; Strengthen health promotion services in the health sector; Implement international conventions and treaties in health ;Implement the health component of the national health policy for the aged; Strengthen rehabilitation services; Mitigate the effect of climate change-related diseases; Establish registry for cancer and other NCDs; Strengthen Mental Health Services |

| | |
|---|---|
| 3. Enhance efficiency in governance and management of the health system<br><br>**Issues:** Inadequate capacity to use health information for decision- making | Strengthen governance and leadership at all levels of the health system; Improve coverage and quality of health data in both public and private sectors; Improve supply chain management system; Implement health sector capital investment policy and plan; Strengthen coverage and quality of health care data in both public and private sectors; strengthen research in the Service; strengthen stakeholder engagement |
| 4. Increase access to quality emergency healthcare services (pre-hospital and hospitals)<br><br>**Issues:** Poor quality of healthcare services; Unmet need for mental health services | Strengthen the management of communicable diseases; Strengthen Integrated Disease Surveillance and Response (IDRS) at all levels; Intensify implementation of the national quality and patient safety strategies; Develop / review and implement national NTD strategy; Intensify efforts for polio eradication; Improve integration of traditional medicine into existing health service delivery system; Accelerate implementation of the national strategy for elimination of Yaws, Leprosy, Buruli Ulcer, Filariasis and NTDs |

## Key Health and Developmental Challenges

Ghana's health and developmental outcomes are influenced by major health challenges. Communicable diseases, including HIV/AIDS, TB and malaria traditionally account for the bulk of morbidity and mortality outcomes. From the WHO Country health profile, 2012, HIV/AIDS forms part of the top ten causes of death in Ghana, accounting for 5% of all cause total deaths. Prevention of sexual transmission as the major mode of transmission remains a challenge in sub-Saharan Africa including Ghana (Kharsany and Karim 2016). Nigeria, Ghana's sister West African country for instance is listed among the top African countries that contribute 80% of the continent's 71% share of the 35million global HIV burden to only 12% of the World's total population (Kharsany and Karim 2016). This places Ghana at high risk due to the sub-region's free zone trade and movement policy which promotes increased migration, commerce, health, and population dynamics among member countries.  Thus, though Ghana, in relation to Nigeria's 13% HIV epidemic, is rated low epidemic (1.3%)

alongside Benin (1.1%), Burkina Faso (0.9%), Gambia (1.2%), Guinea (1.7%), Liberia (1.1%), Mali (0,9%), Niger (0.4%), Senegal (0.5%), and Sierra Leone (1.6%) the disease remains a major challenge (Kharsany and Karim 2016). Adolescent girls and young women are also the most affected.

Adua et al (2017) also cited inadequate investment in health care and limited health workforce as two major health challenges of the Ghanaian health system. Inadequate investment in health facilities and health personnel retention has resulted in geographical inequalities. In particular, the vulnerable rural populations of women, infants, adolescents and disabled persons are unable to meet the cost of reaching well-resourced health facilities or qualified health personnel for health care (Olorunsaiye 2015). This in turn explains their preference for traditional birth attendants (TBAs) in maternal and newborn care delivery (Adua et al 2017; Olorunsaiye 2015). For instance, Ghana at skilled delivery coverage of 68% and maternal mortality ratio of 319/ 100,000 live births in 2015 could not achieve its MDG 5 target of 185/100,000live births (CDC Global Health-Ghana, SS2016).

Saleh (2013) asserts that the Ghana health sector is facing challenges on many fronts resulting in health outcomes not on course to meet several of the MDGs. The situation also reflects the need for both better targeting of public health programmes and improvement in the functioning of the health delivery system (Saleh 2013). Ghana's reform agenda to transition to universal health coverage and inequality reduction will require the government of Ghana to undertake significant reforms. In particular, reforms in decentralization, governance, health service delivery, public health and health financing will need to be integral part of a comprehensive and accountable health reforms process (Saleh 2013; Adua et al 2017).

**Position of Women in Society**

Ghana, like other African countries, is a male dominated society notwithstanding the fact that the female population (51% of total population of Ghana- 2012 census) outstrips that of the male. In the traditional, religious and political settings, men wield the most decision-making power as well as ownership of family resources. For instance, in many Ghanaian societies, women have very limited or no reproductive and sexual health rights in that the woman's preference for use of condoms in sex or contraceptives in family planning is subsumed to that of the husband or sexual partner. Better targeting of MCH program intervention and functioning of MCH and adolescent health delivery system is needed if UHC and MCH outcome inequality reduction would be attainable.

Second, women still form only 12.75% (35 out of 275) of the Ghanaian parliament and only four out of the nineteen cabinet Ministers are women despite Ghana's democratic credentials (Media Foundation for West Africa 2017). Civil Society Organizations, women and gender activists have championed various women empowerment agendas. The aim is to stimulate women's interest and build their capacity to take up key roles (Adepoju 2005) and positions in all facets of society and positively influence national development. Ghana in line with promoting gender, women and children rights, health and well-being established and mandated the Gender, children and social protection Ministry to this effect. The Ministry has hitherto also been headed by female Ministers.

Ghana's literate population (age 15 and over who can read and write) is equally male-dominated with female and male literacy rates being 71.4% and 82% respectively (CIA World Fact Book 2017). Gender parity index for gross enrollment ratio in primary and secondary education is the ratio of girls to boys enrolled at primary and secondary levels in public and private schools. Ghana has very closely monitored gender inequality in this respect and made very good progress (GSS, GHS & ICF International 2015). According to

UNESCO report, gender parity index (GPI) in Ghana was 0.997 (i.e to a target of 1) as of 2016. Its highest value over the past 45 years was 0.997 in 2016, while its lowest value was 0.742 in 1985.

Women over the years (since colonial era) are also disadvantaged economically, that is, in less control of family or community resources such as land and other properties. More women are therefore in the poorest wealth quintile (GSS, GHS & ICF International 2015). Women and children are accordingly the majority beneficiaries of the Government of Ghana's Livelihood empowerment against poverty (LEAP) programme and similar social protection policy interventions.

Adepoju (2005) asserts that traditional male-dominated short-long-distance migration streams in West Africa are increasingly feminized. Females are migrating independently of their husbands in order to meet their economic needs rather than simply joining the husband; some professional women emigrating from Nigeria, Senegal and Ghana leaving husbands behind to cater for children (Adepoju 2005). This represents a changing trend in the traditional sex role in the sub region.

**Recent Policy and Strategies to Reduce Inequalities**

Ghana appears to have done better in maternal mortality ratio and child mortality rate reduction compared to sister West African countries (Adua et al, 2017; WHO, 2015) as shown in the comparative trends above. According to Adua et al, (2017) Ghana's performance could be due to her commitment to increase public health care spending shown by research to be associated with positive impact on health outcomes. For example, per capita health care spending increased from 53 US$ in 1995 to 60 US$ in 2014. At the same time, life expectancy at birth increased from 60 to 64.8 years in 1995 and 2014 respectively; while

infant and under-5 mortalities reduced from 72/1,000 and 111/1,000 to 44.2/1,000 and 78/1,000 live births respectively.

Adua et al (2017) argue that the structure of Ghana's health care system that strengthens health care service provision and the introduction/implementation of various health policies also contributed to the improvement in health outcomes. The health care system is distributed across national, regional, district and community levels that are linked up by a health information transmission and referral care systems to promote accessibility and quality in health care service delivery. Continuity of health care is thus checked in two main ways. First, the referral system ultimately links the CHPS facility and service providers as the smallest unit of the health care system at the PHC level to the tertiary level facilities.

In between, the health centre/sub-district service providers oversee the CHPS level health care delivery and in turn refer management of clinical cases and health conditions beyond their capacity, particularly MCH emergencies, to the PHC referral district hospital. District referral hospital thus provides the in-patient care service needs of the communities (health centres/sub-districts only detain cases for 24-hours and refer-out) in addition to outpatient care services. The referral policy also gives district hospitals oversight responsibility for health care delivery at the sub-district/health centre level including specialists outreach service provision. Thus, district hospitals form an integral part of the district-wide health care system modeled on PHC with emphasis on preventive care and health promotion services provision. The district health care system is thus managed by a district health management team (DHMT) of predominantly public health care professionals and headed by the District Director of Health Services (DDHS), a public health practitioner.

Cases and conditions requiring secondary and tertiary care expertise are managed at the regional hospitals and teaching hospitals respectively. These in turn have oversight

responsibility for the district hospitals. Various policy, technical and regulatory standards and guidelines help to define and map service packages, human resources, equipment and logistics and health infrastructure distribution to each level of the health care system.

Major limitations of the health care system include inadequate and poor state of community level health infrastructure especially the poor and deprived communities (Olorunsaiye 2015; Mutangadura et al 2007; Adua et al 2017; Saleh 2013). Community transport system lacks or is limited in such communities hence accessibility of skilled service providers particularly, MCH emergencies is further limited. Inadequate and worse of all the mal-distribution of skilled service providers further limits geographical accessibility to quality health service provision for the vulnerable populations in particular (Gupta et al 2011; Olorunsaiy 2015; JLI 2004).

Second, it is a regulatory and policy obligation of all health facilities, regardless the ownership, to report their service data onto a national digital platform namely, the District Health Management Information System (DHIMS). The national data repository serves as a basis, complemented by health and related survey/research data, to inform monitoring of trends in morbidity and mortality, inequalities as well as policy and program intervention effectiveness.

In terms of policy interventions, improvement in child health outcomes, for instance, is explained by the introduction/implementation of the Ghana Child Health Policy (CHP) and the Child Health Strategy (CHS) (Ministry of Health-Ghana 2015). These interventions focus on ways to improve accessibility to healthcare, guarantee quality of medical care and increase the demand for essential services. Thus, predominant diseases such as cholera and diarrhea are targeted by these interventions through using evidence-based new medicines and vaccines (Ministry of Health-Ghana 2015; Adua et al 2017).

The wide spread Immunization programmes, the community-based health planning and services (CHPS) and the Ghana essential health improvement project (GEHIP) are similar major health strategies scaling up accessibility and quality of maternal and child health care provision.

Recent maternal, newborn, child and adolescent health care interventions targeting universal health coverage (UHC) and reduction in MMR, NMR, IMR and CMR are being implemented across the country. These include launch and scale up of the new combined maternal and child health record book (MCHRB); medical screening for schools (MSS); maternal and child health conference; Maternal Mortality Surveys; pilot enrolment of family planning services onto the national health insurance benefit packages; and scale up of telemedicine to all 10 regions (Ghana Health Service 2018).

The user-friendly MCHRB, for instance, aims to promote continuity of care, empower mothers, partners and community through health promotion, reduce work load and improve efficiency, safety and cost effectiveness. The MCHRB integrates essential services. These focus on growth monitoring, infant and young feeding (IYF), prevention of mother to child transmission of HIV, malaria prevention, immunization; and essential nutrition messages the first 1000 days to improve nutritional practices and promote UHC.

The MSS programme is part of government's UHC strategies to ensure the health and developmental needs of children and adolescents. These are to be achieved through early detection of actual and potential health problems, monitoring treatment and management of health conditions and breaking transmission of communicable diseases. The current MSS however must incorporate a mechanism to ensure continuity of care and follow-up action for desired effect (Ghana Health Service 2018). MSS policy and strategy development is intended to institutionalize the programme and guide implementation; and to expand

interventions to address MSS needs of primary and kindergarten pupils (Ministry of Health-Ghana 2017; Ghana Health Service 2018).

According to Maries Stopes (2015), family planning impacts reduction in maternal mortality. Government legislation accordingly now provides for free family planning services at the point of use. The policy intervention which is at its pilot phase in a few selected districts in the country is financed by the National health insurance scheme (NHIS) and will be rolled-out nationwide following successful pilot implementation (Ministry of Health –Ghana 2017). The Health Sector Medium Term Development Plan (2018-2021) also prioritizes ring-fenced funds for payment of provider NHIS claims to CHPS, health centres and maternity homes. In addition, the sub-district level carries 45% share of the total health recurrent budget. The strategy is intended to increase availability, demand for and utilization of health care services and resources at the community level and promote universal health coverage and SDG attainment (Ministry of Health-Ghana, 2017; Ghana Health Service 2018).

Human resource for health experts asserts that health service provision is heavily labour-dependent; and health outcomes labour-sensitive (Chilver, 2014; Castillo-Laborde, 2011). Ghana as part of public sector reforms has introduced the human resource management information system (HRMIS) to ensure availability and equitable distribution of well-motivated and productive health workforce. With technical assistance of WHO and funding support from the World Bank and DFID, Ghana in between 2013 and 2018, developed its own workload indicators staffing needs for each health institution or facility within the health system. The HRH planning and management tool is intended to rationalize HRH production, distribution and placement, attraction and retention for attainment of UHC and SDG targets. For example, Ghana has increased production and retention of its core health workforce thereby increasing its essential health worker (Physicians, midwives and nurses) to population density from 1.07 per 1,000 in 2005 to 2.14 per 1,000 population in 2015 (WHO

2016). By this Ghana is cited for being on good track towards attainment of UHC and SDGs and a leading producer of Physicians, midwives and nurses in sub-Saharan Africa (Campbell et al 2013).

To address geographical inequalities in MCH however, successful staffing norms implementation must be backed by requisite decentralization of staff emolument budget and provision of deprived area duty financial and non-financial incentives. These options however still remain policy intents. The staffing norms are also currently being validated prior to implementation.

**CHAPTER THREE – LITERATURE REVIEW**

**Introduction**

Universally, health inequalities are influenced by a wide range of social determinants including health care (Dahlgren and Whitehead 1991; Bunker et al 1995; WHO 2008; Speller 2007; Buck and Maguire 2015). However, health inequalities and the determinants vary within and between countries (Speller 2007). In particular the form and relative importance of each determinant and the most plausible way(s) to tackle them locally for impact depend on the particular context (Speller 2007; Bunker et al 1995). Thus, the plausibility of the presence of contextual human resource for health (HRH) factors impacting equity in geographical access and MCH outcome inequality reduction in Ghana, more than other social determinants, is posited against relevant evidence.

This chapter discusses existing literature regarding what universally determines health, health equity and health inequality but more importantly, in the specific context of LMICs particularly, Ghana. Thus, the chapter summarizes the social determinants of health (SDOH) and the increasing interest in measuring and reducing health inequalities particularly in LMICs. An overview of key theories related to health inequalities particularly Structural, Behavioral, Cultural and Health Selection is provided. These theories are then synthesized into the theoretical framework of this study namely a life course approach to health inequality reduction. The life course model accepts that health inequality (HI) is complex (Russ et al 2014; Davey Smith 2003; Steinbach 2016; Davey Smith, Ben-Shlomo & Lynch 2002). The model also supports the focus of this study to identify interventions that improve early life chances through maternal and child health (MCH) and reduce HI (Russ et al 2014; Davey Smith 2003).

The chapter further demonstrates the context position adopted in this study that LMICs focus on providing PHC services.  Thus, the literature on policy, strategies and interventions which

have focused on MCH services in Ghana and other relevant West or East African countries in relation to health equity, HI reduction and the SDGs is accordingly discussed.

**Equity in Health**

Health has been described by the WHO (1946, 2003 and 2008) as a situation of total physical, mental and social well-being of individuals and population, and not merely the absence of disease or infirmity. Health is thus a social resource to which every individual or groups have equal right and must be equitably distributed (WHO 2008).

Health inequity has accordingly been described as differences in health care that are unnecessary, unfair, unjust and avoidable (Braveman and Gruskin 2003; Gilson 1998; Alleyne 2001). Equity is thus an ethical concept which operates on the principles of distributive rather than procedural justice (Bambas and Casas 2001; Money 1994; Braveman and Gruskin 2003). Kawachi et al (2002) also states that inequity and equity concepts denote a moral commitment to social justice. Thus, in operational terms achieving equity in health means eliminating health inequities associated with social disadvantages or marginalization (Braveman and Gruskin 2003; Marmot 2015). In other words, equity in health means that health care is distributed fairly and according to need of individuals and populations. According to Marmot (2015), the best time to start addressing inequalities in health is with equity from the start. Further, appropriate intervention at any stage of the life course can make difference (Marmot 2015)

**Health Inequality**

Health inequality has been variously defined and measured in research, social and policy agendas (Bartley 2004). WHO (2016) defined health inequality as differences in health status or in the distribution of health determinants between different population groups. For example, mobility is unequal between the elderly and the young populations or

between persons with disability and persons without disability. Health inequality is also explained by causal pathways such as biological variations or free choice while others are external environment or conditions beyond the individual's control (WHO 2016; Bowling 2009; Pill & Scott 1988). According to WHO (2016), whereas biological causality might be impossible to change, social class health inequality, driven by uneven distribution of the determinants of health, is avoidable.

Bartley (2004) affirmed that health inequality (HI) is differences in ill-health, mortality or life expectancy between people with more or less favorable situations relating to income, prestige and education. PHI (2010) also corroborated that health inequalities are preventable and unjust differences in health status between different population groups. Graham (2009) and McCartney et al (2013) similarly describe HI as "*systematic differences in the health of people occupying unequal positions in society*" Health variations among populations become HI only when generated by some characteristic of the population which renders the variations unfair (McCartney et al 2013; Marmot 2015). Those in the lower socio-economic brackets are at higher risk of ill-health, mortality and shorter life expectancy than their counterparts in the high socio-economic brackets (PHI 2010; Bartley 2004, 2007; WHO 2008, 2016).

Thus the distribution of income, education, gender, ethnicity and similar social resources and circumstances across the social structure (social gradient) underpins health inequalities within and between societies or geographical areas (WHO 2008; Marmot 2015). This means the more even these resources are distributed, the flatter the social and health inequality gradient (s) could become (WHO 2008; Bartley 2004, 2007; Marmot 2015, 2005; PHI, 2010; McCartney et al 2013).

Arcaya et al (2015) also asserted that policy action drives even resource distribution, service delivery processes and resulting health outcomes. Hence policy flaws and related

systemic factors underpin avoidable, unjust and unnecessary persistent health inequalities. The moral element in the distribution of health among individuals, groups or countries also makes persistent health inequalities a breach of their fundamental human right to (equal) health (Solar & Irwin 2010; Arcaya et al 2015; WHO-CSDH 2008).

Health inequalities between population groups exist in all countries; and emanate from the ways their society is stratified according to their social circumstances (Marmot 2015). Social disadvantage is a pollutant with profound effects on developing brains and limits children's intellectual and social development (Marmot 2015). These dimensions include socioeconomic, political, ethnic, cultural and gender.

However, the causes of health inequalities in developed countries may differ from those in developing countries. For example, in the OECD countries' context where access to personal health care is universal, inequalities in health status have been found to be related to income and other socioeconomic determinants (Bartley 2007, 2004; van Doorslaer et al 1997; Kunst and Mackenbach 1994). On the other hand, WHO (2000) and Bunker et al (1995) found that improved health among urban populations in developing countries, for instance, is explained by access to improved health care knowledge and services rather than income.

**Determinants of Health**

Health of individuals and population is determined by an inter-play of various factors and not merely by absence of disease or infirmity (WHO 1946; Dahlgren and Whitehead 1991). These factors are broadly categorized into the bio-medical and SDOH models.

**Bio-medical determinant**

The health of individuals and populations in LMICs context cannot be explained by the bio-medical model which argues that disease is always the single cause and its removal returns patient to health (Wade and Halligan 2004). In other words, the medical model

equates health to the absence of disease and a health care system focusing on individualized

medical care or treating disease rather than prevention and health promotion (Jones, 1994 and

Bowling 2009). The model accordingly does not address the critical life course public health

services and resources implications of reproductive and MCH care of LMIC including Ghana

(Lopez et al 2006; Orach et al 2009; Steinbach 2016; Davey Smith 2003; Davey Smith,

Ben-Shlomo & Lynch 2002).

**Social Determinants of Health**

The WHO and social scientists assert that a wide range of fundamental factors operate to

determine individual and collective health outcomes (WHO-CSDH 2005, 2008; Dahlgren and

Whitehead 1991). Thus, physical environment, social, economic, health care and individual

lifestyle and genetic factors come into play. This means health care as a resource and health

outcomes at individual, group and population and national levels go beyond individualized

clinical care (disease treatment) and health services to population health care approach.

The approach focuses on synergistic integration of health services and the wider health-

related care services, disease prevention and health promotion, essential clinical services and

life-course health delivery approach (Steinbach 2016; Speller 2007; Buck and Maguire

(2015). Health outcomes of populations by implication are determined by how inter-sectorial

and integrated the various components of health are in a nation's population health care

delivery system (Buck and Maguire 2015; McCartney et al 2013; Dussault and Franceschini

2006).

Consequently, the distribution of health is determined by interplay of individual, community

and national factors (Steinbach 2016). Individual factors are age, sex, heredity and lifestyles.

Community factors include social and community networks like norms and attitudes,

relationships, support systems and social structure whilst national factors are socio-economic

conditions like healthy environment, clean water, good sanitation and nutrition (WHO 2016; Kelly et al 2007; DHHS 2014). These factors interact at individual, household, community and population levels to produce their health status (WHO 2008, 2016; Marmot 2005).

Dahlgren and Whitehead (1991) and other researchers have ascribed the causes of individuals and population health to social, economic and political factors (i.e social determinants). According to Dahlgren and Whitehead (1991) and WHO (2008, 2015) one's level of health is therefore linked to the one's socioeconomic status. Social determinants of health thus include health care services, education, income, occupation, work environment, agriculture and food production, water and sanitation, unemployment and living and working conditions, social and community networks and the general socioeconomic, cultural and environmental conditions and housing (Dahlgren and Whitehead 1991).

The effects of these social factors influence the individuals' risk of morbidity and mortality, ability to prevent sickness or access effective treatment (Dahlgren and Whitehead 1991). These outcomes also depend on how favorable these life circumstances of the individuals or groups are. The more favorable the circumstances, the healthier they would be (Dahlgren and Whitehead 1991; WHO 2008; Marmot 2005, 2007). The Dahlgren and Whitehead (1991) model of health thus provides various social researchers with a framework for constructing various health inequality hypothesis to determine the relative influence of each social factor. For example, in this study it is hypothesized that presently, in the Ghanaian context, increased geographical access and coverage in quality MCH service provision and resources, more than other SDOH, might reduce the health inequalities between the north and south of Ghana.

The World health Report (2001) on the global burden of disease reveals high rates of morbidity in low and middle-income countries particularly infectious disease and

malnutrition. Infectious diseases and malnutrition suggest presence of low and unfavorable SDOH (WHO 2008, 2001; Dahlgren and Whitehead 1991). For example, poor and vulnerable populations suffer hunger and starvation due to little food, unclean water, low level of sanitation and shelter.

Also, national and local levels fail to address health damaging environmental issues resulting in high exposure to infectious agents and lack of appropriate medical care (WHO 2001). The persistent physical and chemical hazards in LMICs further compound the high spate of informal employment with negligible labor protection (Lopez et al 2006).

At the same time, the double disease burden of LMICs is seen in the increasing presence of non-communicable diseases including hypertension, diabetes and cancers etc. (Leon and Walt 2001; WHO 2001, 2000, 2008). The WHO global burden of disease study further found that people at the lower end of the social gradient are particularly affected (WHO 2001). For example, in Eastern African Uganda crude and under-five mortality rates were worst among the vulnerable populations such as the internally displaced as well as the poor and deprived northern region. Similarly, the Uganda Human Development report of 1998 showed that while human poverty index (HPI) for Uganda was 39.3, the northern region had the poorest HPI indicator of 45.7 compared with eastern, western and central regions. Thus, the causes of health inequity and health inequality in Uganda are associated with socio-economic, conflicts and displacement, and poor health services delivery. These non-communicable diseases and related mortalities, the study found are caused by underweight, overweight, smoking, alcohol, hypertension, and sexual behavior (WHO 2001).

De Brouwere et al (2010); Hogan et al (2010); Stanton et al 2006; WHO 2006; Hill et al 2007 and other studies show that an estimated 6.3million perinatal deaths and between 343,000 and half a million maternal deaths occur annually. Huge majority of the deaths also occurs in LMICs and are avoidable (De Brouwere et al 2010).

According to the authors, interventions aimed at reducing avoidable perinatal and maternal deaths need a health care system offering appropriate antenatal care and quality delivery care, including basic and comprehensive emergency obstetric care facilities. The evidence however shows that the challenge in low-income countries remains delivering both high coverage and high-quality care; and thus, to reduce financial and geographical barriers to access to maternal and perinatal health services particularly to the poor (van Doorslaer and Wagstaff 2000).

De Brouwere et al (2010) though argue that improving access to maternal and newborn quality care does not guarantee a positive effect on maternal and newborn health outcomes but is reasonably considered as a contributing action to this goal, along with education and socioeconomic development. The Joint Learning Initiative Report (2004); van Doorslaer and Wagstaff (2000) and other studies on SDOH and inequality in maternal and child health outcomes adduced evidence asserting that maternal and neonatal mortality responded best to increased access to quality MCH service provision. De Brouwere et al (2010)'s apparent contradiction thus implies that improved access and high coverage/utilization of quality health care services are both necessary for positive effect on MCH outcomes.

Marmot (2007) health equity studies also contrast the root causes of fair health outcomes in OECD or western European countries with those in low-income countries. According to the author, inequality in health outcome between the poor and better off in the former is

explained by inequities in their income and socio-economic status. This is because evidence shows the low-income groups utilize health services more than the better-off in the western European countries. This means health care utilization difference may not explain the health inequality.

In contrast, in low income countries, evidence suggests that the cause of inequalities may be a reflection of the failure of health care services to reach the poor (van Doorslaer and Wagstaff 2000; Gupta et al 2011; Olorunsaiye 2015; Mutangadura et al 2007; Leon and Walt 2001; Bawah et al 2017; Russ et al 2014; Alam 2015). Thus, the authors conclude that in low-income countries, the focus of programmes and intervention development to achieve health equity and health inequality reduction must be on improving fairness in the allocation of health care resources.

According to health equity studies, these health inequities are caused by a complex global, national and local system that influences the way LMICs at the national and local levels organize their affairs and the social positions and structures created (Russ et al 2014; WHO 2001; Dahlgren and Whitehead 1991, Marmot 2005).

**Gender Empowerment**

The phenomenon thus heightened global interest in addressing the SDOH and reducing health inequalities in LMICs. Lopez et al (2006); Orach et al (2009); WHO (2008); Olorunsaiye (2015) and other health inequality studies assert the need for empowerment of individuals, communities and countries if SDOH will be addressed and health inequalities reduced.

For example, the high spate of gender inequality in the distribution of SDOH and health outcomes in LMICs particularly sub-Saharan Africa further affirms the relevance and

urgency of gender groups' empowerment (Olorunsaiye 2015; Orach et al 2009; WHO 2008). Women and children, persons living with disability and internally displaced persons etc. are particularly disadvantaged in accessing these social resources.

According to Lopez et al (2006), empowerment can operate at three interconnected levels. These are material, psychosocial and political needs of the individuals, community and nation at large. According to the authors, people need the basic material requisites for a decent living; they need to have control over their lives and they need a political voice and participation in decision making processes.

For example, Olorunsaiye, (2015) identified women in deprived and rural West and East African communities are unable to access essential MCH care services and therefore have the poorest health outcomes. Orach et al (2009) also emphasized the empowerment needs of displaced persons living in internally displaced persons' camps in northern Uganda. Women in LMICs particularly Africa including Ghana, need to be empowered to have control over their health including participating in decision-making processes and owning basic resources. Empowerment also means achieving a fairer distribution of power which in turn requires collective social action; i.e. empowerment of nations, institutions and communities (Orach et al (2009).

**Individual-level factors**

According to DHHS (2014) some biological and genetic factors affect specific populations more than others. Thus, older women are biologically at higher pregnancy-related risk of experiencing poorer MCH outcomes than adolescents due to biological, physical and cognitive effects of aging (DHHS 2014). Sickle cell disease is also a common genetic determinant of MCH and general health outcome inherited when both parents, carry the gene.

The gene is also most common in people with ancestors from West African countries, Mediterranean countries, South or Central American countries, Caribbean islands, India, and Saudi Arabia (DHHS 2014).

Besides, individual behavior also determines their health outcomes. For example, MMR and NMR reduce with reduction in risk of heart diseases in pregnancy in turn associated with reduction in smoking, and alcohol consumption etc. (WHO 2016; DHHS 2014; Speller 2007). Person's behavior also relates to their ability to cope with stress (WHO 2016; Speller 2007). Many public health care interventions have thus targeted changing individual behaviors in substance abuse, diet, physical activity and hand washing to reduce chronic diseases rates in developing and developed countries (DHHS 2014).

With lack of effective collaboration and appropriate health-promoting care delivery in especially sectors whose primary purpose, core competence and scientific orientations are not directly health, but control the determinants of health (Amstrong et al 2006), informed public health care practice is limited. Health care and safety standards at workplaces and in production of goods and services risk being compromised. Individuals and populations' health-damaging risks and poor health outcomes are also higher.

The premise of the focus of this study on increased presence of skilled health professionals promoting geographical access to and utilization of quality life course health care in UWR, compared to the AR and GAR, is that health-advantage or disadvantage accumulates over time (Steinbach 2016). Also, according to Davey Smith, Ben-Shlomo and Lynch, 2002 in Bartley (2004), adult health is the result of a combination of circumstances occurring over time. The individual, and by extension, the household, community and population health outcomes should then depend on the timely accumulation of health-advantage at every stage

of life through, predominantly, geographical accessibility to the right quantity and quality of health care from trained health promoting professionals.

Thus, clients' location should not be a barrier. Favorable birth circumstances (following from essential reproductive and sexual health counseling and services for adolescent and adult females and males), post-delivery and early years life development health care are critical for the mother and child's health outcomes and socio-economic status in adult life (PHE 2014; GHS and UNICEF 2011; Steinbach 2016).

In Ghana, as indicated above, maternal delivery is free and preventive child health services up to age five are also free. In addition, school health services, mainly health education/promotion, supplementary feeding, personal hygiene and health screening and deworming, among others are equally free and target children and adolescent pupils, and adult students. The fundamental challenge in the UWR however is lack of the skilled HRH trained to deliver these services due to the large geographical inequities indicated in table 2.1 above. Further, in Ghana, patient satisfaction surveys conducted in hospitals showed that health clients associate quality care with being seen by a medical doctor (Offei et al 2004). This holds considerable implications for client health seeking behavior or choice of health provider which in turn has implications for health risks or health protection and the resulting health outcomes.

**Social and community factors**

Social factors influencing health outcomes are resources essential to meet daily human needs (DHHS 2014). They include education and job opportunities, living wages, and healthy foods; socioeconomic conditions like concentrated poverty, quality schools, transportation and appropriate technology. Others are social norms and attitudes such as discrimination, exposure to crime, violence, and social disorder as well as social support and social

interactions (WHO 2016; Dhalgren and Whitehead 1991). Physical determinants include natural environment of plants, weather or climate change, good lighting; or exposure to pollution or toxic substances (Marmot, 2015); and built environment of housing and homes with or without physical barriers to people with disabilities. DHHS (2014) argued that poor health outcomes often worsen with the interaction between individuals and their social and physical environments. For example, countries with high ozone pollution or poor air-quality are associated with high asthma prevalence among both adults and children.

Other factors are culture, tradition and beliefs about health as well as gender impacting a person's health, lifespan and risk of ill-health (WHO 2016; Bartley 2004, 2007; GDHS 2014; GSS 2011). Gender influences diseases and conditions that are specific to male or female, disability or age.

In Ghana, and Tanzania social norms, attitudes and structures perpetrate gender and ethnic discrimination and marginalization in health care and public service delivery (Osei-Assibey 2014; Mkoka et al 2015). As already indicated, the UWR is discriminated against in HRH distribution in the health and related sectors due to lack of government commitment to appropriately invest in targeted HRH attraction and retention interventions to make the region attractive to skilled HRH comparable to the AR and GAR (Osei-Assibey 2014; Zere et al 2012; Mkoka et al 2015).

Cultural and religious beliefs, norms and practices in the north also impact on maternal and child health outcomes. For example, women giving birth at home prove fidelity; women and children not eating eggs for various reasons, using herbal concoctions during pregnancy or bathing newborns with some herbal preparations rather than utilize antenatal and other quality health care (Zere et al, 2012). Health promotion care at homes, communities and

clinics by trained health promoters and delivery of obstetric and newborn care by skilled community midwives, community health officers or Nurses thus become more critical in the north than the south (GDHS 2014; Zere et al 2012; Osei-Assibey 2014). Maternal and neonatal health outcomes have been poorest in UWR compared to the AR and GAR (GHS and UNICEF 2011; Zere et al 2012). The geographical barriers to these free quality health care services could thus be the more plausible MNCH inequality's fundamental causal factors than education, income and occupational characteristics of individuals and populations of the UWR (Olorunsaiye 2015; Zere et al 2012; Mkoka et al 2015).

According to Bowling (2009) the social model of health outcome determinants is consistent with the focus of rehabilitation programs whereby while the limiting health condition of an individual is not removed, interventions are required to facilitate coping by the affected person. For example, developing coping competencies for successful ageing well, mental health promotion or the disabled functioning and therefore improved health outcomes (Bowling 2009).

Bowling (2009) also asserted that the social model accounts for individuals' subjective feelings and perceptions about health and disease. Social research evidence shows that a person can be diseased by bio-chemical standards, but they may not feel sick as in the case of high blood pressure; just as one may feel ill-health without any biochemical indications of ill-health as in chronic back pain (Bowling 2009).

Thus, for the social scientists, health and ill- health are a continuum along which an individual progresses or regresses depending on their accessibility to and utilization of essential life-course health care (Bowling 2009; Ogden 1996; Marmot 2015). The social model is consistent with the WHO's holistic approach to health and health delivery though

the approach has been critiqued as utopia. The model is also relevant to the study topic as it is gender sensitive and promotes social inclusion in the distribution of health outcomes and to the Ghanaian context.

Wade and Halligan (2004) and Bandura (1977) also ascribed the determinants of health outcomes to social, community and national factors. Thus, the influence of personal context and choices like health beliefs, attitudes, expectations and values and their constant interaction with different contexts become significant.

Further, Pill and Scott (1988) posited that health outcomes are influenced by both personal and external factors. Personal factors include beliefs, spirits, diet and habits whilst external causal factors can be cold, damp, pollution or disequilibrium in the environment (Foster and Anderson 1978). Pill and Scott (1988) argued that a person's beliefs about causation of ill-health or health largely influence their readiness to accept responsibility for health or their responsiveness to health-promoting interventions.

According to Pill and Scott (1985, 1988); Coulter (1987) and Helman (1990), people in the lower socio-economic brackets were therefore most likely to perceive health and ill health as caused by the external factors beyond their control. Conversely, people within the high socio-economic groups were most likely to explain health or ill health as individual behavioral causes like diet. Thus, psychosocial model, like the social model, also throws some socio-cultural and economic insights into understanding individual and group approaches to health and tackling health inequalities through informed behavioral and socio-economic intervention programming and action (Staveteig 2016). As indicated above, segments of the population, arguably, could be impacted with life course health-promotion and related care by trained HRH deployed in their communities who will

identify with clients and likely impact their health outcomes. This study, particularly from the householders and professionals FGDs could thus shed useful insights into these personal, social and community level beliefs, attitudes/norms and behaviors and how health outcomes can be improved in such communities, groups and individuals (Staveteig 2016); and the influence of HRH and the other social determinants like education, income and occupation.

**National factors**

The distribution of health-promoting socio-economic and physical resources, policy environment, and political power, among others largely determine individual and population health (WHO 2008, 2012, 2016; DHHS 2014; Songsore 2011; Osei-Assibey 2014). DHHS (2014), JLI, (2004) and Bunker et al (1995) underscored the high impact access to and quality of health care as a socio-economic resource has on the health status of individuals and populations. Thus, lack of access or limited health care greatly impacts their health status. For example, an individual without health insurance is unable to access preventive health services and also delays in accessing medical treatment (Agyeman et al 2014; Osei-Assibey 2014). This implies that such individuals or populations are more likely to have relatively worse health outcomes. According to DHHS (2014), Olorunsaiye (2015) and Ross (2015) barriers to accessing health services include lack of availability, high cost, lack of insurance cover and limited language access. These lead to unmet health needs, delays in receiving appropriate care, inability to get preventive services, and hospitalizations that could have been prevented (Staveteig 2016; DHHS 2014).

 In Ghana, health care availability and utilization are measured in geographical, social and financial terms. HRH, with necessary infrastructure, appropriate technology, social and financial enablers, are in turn central to equity in geographical access to quality health care

and wealth creation (Ministry of Health-Ghana 2007-2011; HSMTDP 2010-2013; Ministry of Health-Ghana 2012, 2013, 2014, 2016).

 As indicated above the Ghanaian population is generally provided health insurance cover under the national health insurance up to 95% of disease/conditions reported at outpatient and in-patient departments, albeit not perfect at implementation; free maternal delivery and antenatal care and cash transfers to the poorest households (Agyemang et al, 2014). Notwithstanding the financial accessibility at the point of use, utilization of health facilities for delivery remains low particularly in the north; and survey respondent mothers cited distance from health facility and associated travel and social costs as the reasons (GSS, GHS and ICF International 2015; Olorunsaiye 2015; Zere et al 2012). Geographical accessibility in terms of door-to-door services of trained community level HRH professionals like midwives, social welfare officers and community development officers, among others, provides a more plausible option to improving service coverage and health outcomes. It is in this direction that, on paper, the Ministry of Health's medium-term development plan 2014-2017 seeks to encourage private health providers, particularly doctors wishing to set up in such deprived areas and attract skilled HRH over there (Ministry of Health-Ghana 2014; Dussault and Franceschini 2006).

WHO (2016) argued that place of residence, state of the environment, income, education and social relationships have considerable impact on health; but access and use of health care services and similar commonly considered factors have less impact. Specifically, higher income and education; safe water, houses, communities and roads; clean air and healthy working environment and social support networks were linked to better health. Thus, low levels of these determinants would produce poor health and shorter lifespan of the individual (WHO 2016).

From the above Ghanaian context analysis, however, the WHO (2016)'s and similar arguments could be challenged. A more plausible solution could be increasing requisite HRH in these disadvantaged sectors/communities, with the enabling work and living environment, to bridge the yawning unmet health needs in the north (Zere et al 2012; Gupta et al 2011; Staveteig 2016). Making geographical access circumstances favorable and health-advantage accumulating (Steinbach 2016; Davey Smith, Ben-Shlomo and Lynch 2002; WHO 2016; Marmot 2005) could be the overriding health determinant for populations like UWR.

**Key Theories on Health Inequalities**

Arcaya et al (2015) postulated that some vital concepts must be explained in operationalizing a health inequality study to make explicit issues being investigated. Health inequalities are examined or measured at various levels namely, across the global population, between countries, within geographies and by socially relevant groupings like race or ethnicity, gender, education, income and occupation (Arcaya et al 2015; Marmot). This study is at country level but draws on relevant African country and global experiences and, most importantly, emphasizes contextual country experiences and evidence in Ghana to serve the study purpose.

The study also measured the socio-demographic and socio-economic characteristics of survey participants in order to clearly describe social structure of the study populations and help understand the fundamental causes of the health inequalities between the population groups (Marmort 2015; Arcaya et al 2015) in the north and those in the south of Ghana. For example, participants' age, sex, ethnicity, marital status, location (space and place) accessibility data, among others were collected and analyzed for statistical significance in related health inequalities. Socio-demographic characteristics like location,

ethnicity and gender showed statistically significant health inequalities between the UWR and the AR and GAR. These are discussed in detail in chapter five of this study.

**Examination of HI: Individual and Group Levels**

Group-level differences examine health status inequalities across groups to understand social inequalities in health (DHHS 2014; Bartley 2004, 2007). For instance, how does the body mass index (BMI) of the rich compare to that of the poor; or how does ethnicity explain health seeking behavior and health outcome inequalities; or accessibility of particular population groups' location to health providers or facility (Olorunsaiye, 2015; DHHS 2014, Mutangadura 2007)? The approach allows necessary targeting of investment for bettering the lot of the worst off group (s); and support the creation of laws and programs seeking to eliminate the health differences (Arcaya et al 2015; PHE 2014; Osei-assibey 2014; Graham 2009). Group differences in health are created by the unfair distribution of the social determinants of health hence it is imperative to track equity in a society by reporting health indicators on group basis (Arcaya et al 2015; WHO 2016; Marmot 2015).

Gakidou and King (2002) however observed that health inequality studies had always measured group level inequalities by way of average health status across social, economic and other groups. Depending on the particular study focus, differences in average health status may be measured across income groups; social class; political structure; ethnicity /racial groups; by educational attainment or occupation (Gakidou and King 2002). According to the authors, no study existed on the distribution of the risk of ill-health across *individuals*, either within groups or across all people in a society. This missing vital part of health inequality measurement was due to *total health inequality* having been overlooked. The reason for this neglect had been that the risk of death, which forms the

basis for most measures, is impossible to observe directly and difficult to estimate (Gakidou and King 2002). Total health inequality thus assures that no individual variation in health status is ignored. The authors concluded that total health inequality estimates should be routinely reported alongside average levels of health in populations and groups in order to reveal important policy-related information which otherwise would have been unknown.

Another advantage of the approach is that it enables meaningful comparisons of inequality across countries and future analyses of the determinants of inequality (Gakidou and King 2002; Arcaya et al 2015). A total health inequality study on under 2-year child survival in 50 low-income and middle-income countries using country DHS data and interviews, for example revealed that health status inequality index was worse in some countries compared to their average health status distribution (Gakidou and King 2002).

**Group's historical and cultural context**

Group-level health inequality trends also examine their historical and cultural contexts to understand how the health differences arose (Gakidou and King 2002; Arcaya et al 2015; Bartley 2004, 2007. For example, the history of slavery and segregation in the United States sheds very important light on the present racial or ethnic health inequalities (Arcaya et al 2015).

Conversely, measuring health differences across the entire national population or using national averages hide important insights into which group (s) fares better and which is worse-off; whether the gap is avoidable or unjust; and the specific underlying reasons for the difference (Arcaya et al 2015; Bartley 2004, 2007; WHO 2016; Gakidou and King 2002).

The national average approach is therefore inappropriate to this study. Rather, the study measured the fundamental determinants of differences in neonatal and maternal health outcomes across individual household mothers within each study region and between regions; and the degree of influence of each variable. The approach is thus at sub-national population levels and should shed light on appropriate policy actions targeting regional population groups to help reduce health inequalities between the UWR and the AR and GAR.

The WHO recommends categorization of social groupings into place of residence, race or ethnicity, gender, education, income, occupation, religion, socio-economic status and social capital or resources. Arcaya et al (2015) and Marmot (2015) observed that social groupings are constructed according to membership of religion and ethnicity; or categorized by ordered or continuous level of variables like education and income. This study defined its social groupings in relation to location, age, gender, ethnicity, health care accessibility, income, education and occupation, among others, and measured maternal, neonatal and other health differences across groups and across regions; and the underlying causal factors and their relative importance.

**Dose-response or threshold-effect of social resource**

Arcaya et al (2015), Marmot (2015, 2005), Buck and Maguire (2015) and Bartley (2004, 2007) observed that a 'social gradient' in health exists whereby an increase in a social resource such as education corresponds with increase in health thus a dose-response relationship. Therefore, at both low and high levels of education, additional years of schooling result in marginally better health. Conversely, a threshold effect on health implies persons without secondary education are associated with worse health outcomes whereas education and health might not be linked for those with secondary education or

higher qualification. Thus, one would not expect graduate degree holders to be healthier than those with college qualification. The policy responses would therefore be distinct for the two sets of evidence and must be treated as such. Many health inequality studies including the Black report (1980) of U.K and Buck and Maguire (2015) have indeed linked educational attainment to better health outcomes more than access to medical care.

Osei-Assibey (2014) and Quansah et al (2016) also linked better health outcome to educational attainment but silent on the relative importance of health care accessibility/utilization which this study estimated. A closer analysis of the Ghanaian case based on arguments in preceding chapters and sections suggests at best, a threshold effect of educational attainment on health outcomes and inequality. For instance, the Ghana demographic and Health survey (2014), the 2011 GHS and UNICEF health equity studies, Zere et al (2012); Gwatkin (2017); Olorunsaiye (2015) and this study's FGDs indicated that mothers are not accessing or utilizing maternal and child health care services particularly skilled assistance birth mainly due to facility distance and related transportation and social costs, notwithstanding that these services are free at the point of use. Thus, utilization of these free services, including health promotion messages and counseling on cultural, behavioral and attitudinal factors, appear heavily dependent on skilled HRH availability at their door-step.  This is achievable using the CHPS strategy, complemented with the tele-medicine health delivery strategy. The strategy provides all essential primary maternal and child, and general health care needs and services in clients' homes, communities and clinics. These services are also planned, organized and delivered by, with, through and for the clients/community. Thus, the appropriate community structures and approaches help promote acceptability and utilization of the services (Nyonator et al 2005; Bawa et al 2017).

Olorunsaiye (2015) in a study on reducing maternal deaths in seven West and Central Africa countries (including Ghana) also found that maternal deaths can be prevented when women deliver in health facilities attended by skilled personnel. Further, poor women and women who live in impoverished rural or urban communities are less likely to deliver in health facility (18% of poorest women) than wealthy women and those in wealthy rural and urban communities (82% of wealthiest women). Further, providing vouchers to low-income women to cover health care cost and expanding the numbers of trained midwives in poor communities could remove the barriers to delivery with skilled birth attendants and prevent maternal and newborn deaths (Olorunsaiye 2015; Dussault and Franceschini 2006).

In Ghana, health facilities in poor and/or sparsely dispersed communities, like in Nigeria and the other study countries, are weak or non-existent due to understaffing and under-resourcing (Zere et al 2012; Olorunsaiye 2015). Thus, women are apprehensive of long-waiting time at such facilities even if they are able to find transport (rarely available) and pay the related costs (Olorunsaiye 2015).  Both uneducated and educated women in such under-resourced health communities in the north of Ghana could use skilled delivery and related maternity and life-course services if their communities were well-staffed and well-resourced (GDHS 2014; Zere et al 2012; Osei-Assibey 2014). The relatively very high unskilled attendant home deliveries in UWR, due to skilled HRH and related investment barriers, could plausibly better explain its unacceptably high institutional MMR compared to the AR and GAR as indicated in Chapter one (JLI 2004; Dovlo 2007). Further, even those mothers and newborns who survive such high-risk home deliveries are most likely to accumulate health-disadvantage relating to birth trauma and lack of life saving /health-promoting post-delivery care for both mother and child (Steinbach 2016; Russ et al 2014; Olorunsaiye 2015; Marmot 2015). In particular, supporting mother to establish immediate

breastfeeding, neonatal resuscitation, incubation services and other perinatal and postnatal care are most critical for the survival and accumulation of health-advantage for both newborn and the mother (Mutangadura 2007; JLI 2004; Bunker et al 1995; Marmot 2015). The early growth and development potential and life expectancy of such newborns are thus most likely stifled from the outset with consequential poor health outcomes (Marmot 2015; Steinbach 2016). Their potential to accumulate educational, income, occupational and social capital is then also stifled and more likely end up poor, uneducated, marginalized and stigmatized (Marmot 2015). In this Ghanaian context, geographical health care accessibility/utilization appears a more plausible fundamental 'cause' of the health inequalities and the other social determinants, the 'effects'.

**Absolute poverty versus relative poverty**

Groups' social positions can also be classified according to absolute poverty or relative poverty and whether these matter for health (Arcaya et al 2015). With 'absolute' poverty one is below a fixed monetary threshold (absolutely impoverished) whilst those below say 30% of a national per capita are considered relatively impoverished (Arcaya et al 2015; Osei-Assibey 2014). This means social position positively changes as income increases (Bartley 2004, 2007; Osei-Assibey 2014; GDHS 2014; Arcaya et al 2015). In health, absolute poverty objectively measures wealth and is useful for testing *absolute income hypothesis* which posits that an individual's health depends only on their own income and not on what others in the population earn (Arcaya et al 2015; Bartley 2004, 2007; Black Report 1980). Thus, where an individual's income remains constant, their health should not change as those around become wealthier (Arcaya et al 2015). In other words, beyond a basic income level, additional income has no effect on health.

Absolute income hypothesis however fails to account for changes in material goods required for one to continue to fully participate in society (Arcaya et al 2015). The

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additional income requirements result in psychosocial and stress-related health problems for the individual (Arcaya et al 2015). The GDHS (2003, 2008 and 2014), Osei-Assibey, (2014) and other socio-economic and health surveys put over 80% of the UWR population within the lowest wealth quintile with only 2-3% in the highest wealth quintile compared to the reverse in the Ashanti and Greater Accra regions. This means the UWR's context is more of absolute income poverty relationship to health outcome and health inequality. The basic income question, in Ghana's health care context, is however being addressed with the social protection interventions referred to above (Agyeman et al 2014).

Access to and utilization of skilled HRH's maternity and general life-course health care could far more explain the inequalities between the north and south of Ghana than poverty or wealth (Olorunsaiye 2015; Dussault and Franceschini 2006; JLI 2004; Gupta et al 2011). In other words, geographical access to integrated health care delivered in the communities by skilled HRH professionals in the health, education, food and Agriculture, construction, industry, local government and related sectors plausibly holds the key to sustainable reduction in health inequalities between the UWR and the Ashanti and GAR (Olorunsaiye 2015; Dussault and Franceschini 2006; JLI 2004; Gupta et al 2011; Songsore 2011).

Arcaya et al's (2015) critique of the absolute income hypothesis could be limited. One could still experience health effect (positive or negative) with income remaining constant. But their access to quality life course health care improves through targeted investment to increase skilled HRH presence and related social resources within such underserved (Zere et al 2012; Osei-Assibey 2014; JLI 2004; Gupta et al 2011; Graham 2009). Furthermore, the individual's health behavior or choices could still result in effect on their health (Bartley 2004, 2007). For example, increase in non-income related physical activity or healthy diet could result in positive health outcomes for the individual and group. These

health-promoting services form part of the integrated life course maternity and general health care requiring increased geographical presence of trained HRH in the north of Ghana. This study could therefore fill in a knowledge gap with evidence from primary survey, secondary data and qualitative data from IDIs and FGDs. The evidence can support the argument that: maternal, child and general health outcome inequality between impoverished UWR and endowed AR and GAR of Ghana could significantly reduce with increased geographical access to skilled HRH in UWR (JLI 2004; Zere et al 2012; Osei-Assibey 2014).

**Place and space effect**

Arcaya et al (2015) also asserted that the notions of place and space suggest ways in which geography can affect health. Space measures distance or proximity of one's exposure to health risk distribution or protective factors which change depending on the one's location or origin (DHHS 2014; Arcaya et al 2015). For example, air pollution as a health risk to asthma distributed over space; sickle cell disease in relation to ancestral origin; or health clinics as health-protecting or promoting space (DHHS 2014; Osei-Assibey 2014; Songsore 2011). Place on the other hand measures membership of political or administrative units like school districts, cities or states (Arcaya et al 2015; DHHS 2014) where most government programs and policies are run uniformly within their boundaries. The authors noted however, that the concepts of space and place are often treated interchangeably as people in the same place are also very close together in space. The authors concluded that observed geographic health inequalities may be driven by processes that are routed in space, place or both. Thus, policies and programs can then more effectively target addressing geographic health inequalities (Zere et al 2012; Olorunsaiye 2015; Mutangadura 2007; Osei-Assibey 2014; Songsore 2011).

In this study, space and place-related influence on the health and health differences between the north and south of Ghana were considered in terms of inherent factors or conditions that promote or damage health of the two population groups. For example, the UWR in the north falls within the meningitis belt and experiences perennial cerebro-spinal meningitis (CSM) outbreaks due to long, hot dry hamattan winds; regions here are also health facility-deprived and, coupled with the general socio-economic deprivation and high poverty levels (Osei-Assibey 2014; Songsore, 2011). These regions have been unattractive to skilled health professionals (Olorunsaiye 2015; Zere et al 2012; Dussault and Franceschini 2006). Health care access is therefore very limited with poorer health outcomes relative to the south (Osei-Assibey 2014; Olorunsaiye 2015).

**Reporting on trends in health inequalities**

Arcaya et al (2015); Bartley (2004, 2007) and WHO (2016) observed that reporting on trends in observed health differences between groups or populations is a complex task. Hence, researchers must carefully decide how to report on them, regardless how the study was operationalized (Arcaya et al 2015; WHO 2016). Observed health differences between groups can be expressed as 'absolute', that is, subtracting one quantity from the other or 'relative' by dividing one quantity by the other to obtain a ratio (Arcaya et al 2015).

Further, tracking and reporting on health inequalities over time requires baseline information and then both absolute and relative health inequality trends between the social groups/population for a complete picture on the phenomenon (Arcaya et al, 2015; Gakidou and King 2002; Bartley 2004, 2007; WHO 2016). This enables tracking of important changes in their effects on the different social groups or populations being studied (WHO 2016; Gakidou and King 2002; Marmot 2015). For example, while observed absolute

health differences may increase from 10 per 100,000 to 15 per 100,000 over a 10-year period, the relative health differences could be decreasing at 33% and vice versa (Arcaya et al 2015). Selective reporting of absolute and relative health differences has the limitation of not clarifying whether the groups are faring better or worse over time and to what extent (Arcaya et al 2015; Gakidou and King 2002).

This study employed 2003/2004 national secondary and survey data as baseline information on health outcome differences between the UWR on one hand, and the AR and GAR on the other hand. A10-year trend information on both absolute and relative health differences from both quantitative and qualitative information, were gathered and analyzed to observe changes in trends and their effect on the two population groups studied. The changes were also observed in line with effects of changes in HRH policy and skilled HRH availability, distribution and utilization between the two areas. The results indicated that HRH improved in UWR between 2012 and 2014. Simultaneously, the improved geographical access to skilled maternity services showed statistically significant effect on neonatal mortality (primary data) and institutional maternal mortality (secondary data) more than education, income and occupation. The improvement margin in these health outcomes in the UWR was better than those of AR and GAR. The results suggest that in the context of Ghana, increased skill HRH presence with needed investment in targeted incentives and other contextual interventions (Dussault and Franceschini 2006; Zere et al 2012; Gwatkin 2017; JLI 2004) could better narrow the inequality gap than the other social determinants.

Trends in health inequalities also persist over generations across social, population, age and ethnic groups (Bartley 2004).

Bartley (2004) further observed changes and trends in social class health inequalities from age-specific and one-time perspectives. Using simple annual mortalities per a 100,000

population in specific age groups within each social class, instead of the standard mortality rates, enabled a year by year comparison of changes. The author observed that deaths among certain age groups were very low hence the use of deaths per a 100,000 population addressed the problem of tiny figures involved in the use of percentages. For example, annual deaths among men aged 25-34 in the English social class I in 1991was only 0.0039.

Arcaya et al (2015) and Marmot (2015) also postulated a reflection on kinds of social conditions that make health inequalities unjust. Thus, the merits of policies that prioritize elimination of health inequalities and those focusing on raising the overall health standards in a population can be considered. As indicated above, primary and secondary data speak to the context of Ghana's health inequality trends and the effect of HRH policy and social determinants like education, income, occupation and health behavior.


Ghana's disease burden pattern has also changed from the previously communicable disease predominance to both communicable and non-communicable diseases across its population. For example, though malaria still remains the number one cause of morbidity and mortality, its proportion has significantly reduced while hypertension, diabetes, road traffic accidents, cancers are assuming high positions among the top ten leading causes annually (Ghana Health Service 2014, 2015, 2016; GSS, GHS and ICF International 2014).

This epidemiological transition has therefore had very significant health care accessibility implications for populations of the UWR and sister regions in the north due to lack of specialist and general medical doctors; and acute shortage of trained midwives, nurses and other professionals in both district and regional hospitals. District hospitals in regions in the north are commonly run by only one doctor and a regional hospital may not have a specialist at all and very few general practitioners (Gupta et al 2011; Zere et al 2012).

There is therefore heavy reliance on Physician Assistants in both hospitals but these middle level cadres are equally limited due to production capacity and regulation limitations and the geographical mal-distribution in favor of the south (Dussault and Dubois 2003; Ministry of Health-Ghana 2007, 2013, 2014; GHWO 2011; Gupta et al 2011). The impact of this HRH policy implementation gap on access to skilled HRH and on health inequalities between the UWR and the AR and GAR compared with education, income, and occupation has not been explored hence the significance of this study.

**Determinants of Health Inequalities**

Determinants of health inequalities and determinants of health are different and must be treated as such (Kelley et al 2007; Marmot 2005; WHO 2008, 2016). According to Kelley et al (2007) determinants of health are linked to general health improvement and include improvement in the environment, good sanitation and clean water; better nutrition, high levels of immunization and good housing but these factors do not necessarily lead to reduction in health inequality. Conversely, the determinants of health inequities and inequalities are socio-economic and linked to social disadvantage and marginalization (Marmot 2015; Kelly et al 2007; Graham 2000; WHO 2008; Marmot 20005; Bartley 2004, 2008).

McCartney et al (2013) also emphasized that HI theories must distinguish between its underlying causes and ensuing mechanisms and the appropriate actions (not policy rhetoric) taken to impact the former and reduce HI. These underlying causes include health care, income, occupation and employment, education, housing and environment and power circumstances of social groups (MacCartney et al 2013; Marmot 2015; Kelley et al 2007). The authors thus postulated that health inequalities would remain even with general health improvement for everybody if the causes of HI are not effectively addressed. This is because

the effects of generalized health improvements vary within and across the social spectrum with the socio-economically better-offs always gaining a disproportionate share of the health-gain (Kelley et al 2007; MacCartney et al 2013; Marmot 2015).

Kelley et al (2007) thus asserted that, 'causes of the causes' of health inequities and HI must be clearly measured and the resulting evidence used to drive appropriate and effective policy action. According to WHO (2008), Marmot (2005), Songsore (2011) and Osei-Assibey (2014) inequities in the distribution of health-promoting socio-economic, physical and political resources result in worse health outcomes among the socially disadvantaged. The lack of equitable access to these social resources exposes them to health-damaging circumstances while the better-offs accrue more health gains (Marmot 2015).

**The Socio-economic determinants**

Income, wealth, occupation and education have commonly been used as independent variables for measuring socio-economic inequalities in health outcomes (Bartley 2004, 2007; Steinbach 2016; GSS 2008, 2014; McCartney 2013).

Mutangadura et al (2007) in a review of evidence and policy implications of HI in selected African countries also associated lower health outcomes with disadvantaged groups. Huge inequities in health care access due to geographical location and financial factors accounted for the inequalities. The study measured equality of health care access and health differences among income, rural/urban locations and gender groups using demographic health survey data. The study concluded that specific policies aimed at improving both geographical and financial access to health care are essential. Similar conclusions were reached by several other HI and health care equity studies conducted in similar settings including Olorunsaiye (2015); Zere et al (2012) and GDHS (2014).

In Ghana, the Statistical Service's (GSS) five yearly demographic and health surveys have over the years used wealth quintiles, income, occupation, education and gender to measure trends in demographic, socio-economic and regional inequalities in health with similar findings (GDHS 2014; Osei-Assibey 2014) as per table 2.2. The UWR is worse-off in child mortality indicators over the two survey periods preceding the 2014 survey, compared to the GAR and AR. For example, a neonate in UWR is 1.5 times more like to die within its first month of life than in GAR (Quansah et al. 2016; GDHS 2014; Osei-Assibey 2014). An Under 5 in UWR is also twice more likely to die than in GAR (GDHS 2014; Osei-Assibey 2014 Quansah et al. 2016).

**Table 3.1: Early Childhood Mortality Rates by Socio-economic Characteristics**

**Neonatal, Post-neonatal, Infant and Under 5 Mortality Rates for the past 10-Year Period Survey by Background Characteristics**

| Background Mort. | NNM | PostNNM | IMR | Child Mort. | Under-5 |
|---|---|---|---|---|---|
| Characteristics | | | | | |
| **Residence:** | | | | | |
| Urban | 33 | 16 | 49 | 16 | 64 |
| Rural | 29 | 17 | 46 | 30 | 75 |
| **Region** | | | | | |
| Western | 28 | 12 | 40 | 16 | 56 |
| Central | 36 | 12 | 48 | 22 | 69 |
| **Greater Accra** | **25** | **12** | **37** | **11** | **47** |
| Volta | 30 | 12 | 42 | 20 | 61 |
| Eastern | 30 | 13 | 43 | 26 | 68 |
| **Ashanti** | **42** | **22** | **63** | **17** | **80** |
| Brong Ahafo | 27 | 10 | 38 | 20 | 57 |
| Northern | 24 | 29 | 53 | 61 | 111 |
| Upper East | (24) | (22) | (46) | (27) | (72) |
| **Upper West** | **(37)** | **(27)** | **(64)** | **(29)** | **(92)** |
| **Mother's Education** | | | | | |
| No Education | 30 | 23 | 53 | 41 | 92 |
| Primary | 35 | 16 | 51 | 23 | 73 |
| Middle/JSS/JHS | 28 | 14 | 42 | 13 | 54 |
| Secondary + | 36 | 9 | 45 | 11 | 55 |
| **Wealth Quintile** | | | | | |
| Lowest | 32 | 22 | 55 | 39 | 92 |
| Second | 26 | 19 | 44 | 30 | 73 |
| Middle | 26 | 13 | 39 | 22 | 61 |
| Fourth | 31 | 16 | 47 | 8 | 55 |
| Highest | 40 | 11 | 51 | 13 | 64 |

**Source: Ghana Demographic and Health Survey, 2014**

**Materialist determinant model**

The model posits that poverty exposes people to health hazards and consequential poor health outcomes (Steinbach 2016; Barley 2004; Marmot 2015). Thus, people in the disadvantaged social positions are more likely to live in areas where they are exposed to air-pollution and damp housing (Steinbach 2016; Bartley 2004, 2007). According to the Black Report, 1980, materialist explanation was most important in explaining social class differences in health status in the U.K (Steinbach 2016; Bartley 2004). According to Steinbach (2016) many studies linked childhood respiratory disease to damp housing. The model is equally limited in explaining health inequalities. First, the full impact of living standards can only be observed over a life time (Steinbach 2016; Russ et al 2014).

Second, public health experts argue that despite playing a role in HIs, a simple materialist explanation is insufficient because in welfare states such as U.K, disadvantaged people receive state support in rent, school meals and unemployment benefits among others, hence poor diet and housing cannot account for all health outcome inequalities (Steinbach, 2016; Bartley 2004). Further, HIs internationally tend to follow a steady gradient hence debunk the underlying notion of only the most disadvantaged people experience poor health outcomes and the most advantaged have good health outcomes (Steinbach 2016; Bartley 2004). An extension of this model is the neo-materialist model which only shifts the emphasis of the materialist model on how much an individual's income can buy to public-funded provisions such as schools, public health and transport (Bartley 2004). According to Bartley (2004) and Mackenbach et al (1997), the model is also limited in that Sweden, in a large European study showed one of the highest degrees of HIs despite providing generously to pensioners and unemployed. Similarly, the well-provided Nordic nations appeared to have done worse than Italy, Switzerland and Greece and no sign of doing any better than France and Britain (Bartley 2004). However, Mackenbach and colleagues showed that regardless of one's socio-

economic position, the Nordic nations enjoyed long average life expectancy thus though the neo-materialist model could not explain the inequalities, it did for life expectancy (Bartley 2004). Gakidou and King (2002) and other HI studies show evidence that national health status averages are limited in that the needs of the worse-offs are hidden and cannot be identified and tackled appropriately.

In Ghana, some pro-poor and pensioners' benefits are provided to an extent (Osei-Assibey 2014). These include pensioners' monthly pensions, cash transfers to core poor households under the LEAP program, exemption from national health insurance premium and school feeding program in primary schools (Agyemang et al 2014). Nevertheless, health inequalities appear increasing between the UWR (the poorest) and the AR and GAR; and between the poor and rich (Osei-Assibey 2014; GSS, GHS, ICF International 2014). Further, though Senegalese were 1.7 times wealthier than Ghanaians in per capita GDP, their life expectancies (59 and 57), immunization coverage rates (74 and 83) and infant mortality rates (60/1000LB and 76/1,000LB) respectively were not sharply different (Mutangadura et al 2007). Kenya was also 3 times wealthier in per capita GDP than Ethiopia but the latter had marginally better life expectancy (56-years) and IMR (77/1,000LB) compared to the former's 53-years and 79/1,000LB.

Marmot (2005) also posited that poverty operates to increase the susceptibility of the poorest social groups to natural disasters and disease and leaves them in poorer health. Thus, African countries are poorest relative to the rest of the world and have the worst health outcomes. For example, in the 1990s, Sierra Leone had 316 per 1000live births under-five child mortality compared with 3 per 1000 in Iceland; 4 per 1000 in Finland and 5 per 1000 in Japan. Within countries, child mortalities are highest in the population falling within the lowest socio-economic quintile. Marmot (2005) further observed that differences in adult mortalities among and between countries were large and growing. Thus, the probability of men aged

between 15 and 60 years dying was only 8.3% in Sweden but 82.1% in Zimbabwe and 90.2% in Lesotho.

In examining the causes of causes relating to poverty and poor health, Marmot (2005) argued that technically fixing elements of material deprivation like provision of clean water and medical care would not, for example, address the tragically shortened life expectancy of Sierra Leone. This is because in-country, those who actually need these resources may not benefit due to the resource distribution processes being socially and politically motivated (Graham 2009; Kingdon 2011; Marmot 2015). Moreover, international policies such as those of the International Monetary Fund are not pursued with peoples' basic needs in mind (Marmot 2005). Thus, recognizing the effects of poverty on health is one thing; and taking appropriate action to relieve its effects on health entails a deeper understanding of the health effects of social and economic policies (Staveteig 2016; Marmot 2005; Kingdon 2011; Osei-Assibey 2014).

Marmot (2005) also noted that poverty and its health effects operate in different forms in relation to chronic diseases and violent deaths in adults compared to infectious disease in children. These mediating forms are the social gradient, stress, early life, social exclusion, work and unemployment; as well as social support, addiction, food and transport.

 According to Marmot (2005), however, income poverty at best offers an incomplete explanation for health inequalities (HIs) between and within countries. The author argued that evidence shows weak correlation between gross national product per person and life expectancy. Also, in Ghana, West Africa and other developing countries, infections are a major cause of neonatal mortalities among all the wealth quintiles (GSS 2011; GDHS 2014). Such mortalities may therefore not necessarily be linked to income poverty.

Marmot (2013, 2005) thus postulated practical action on the social determinants of health as a major response to HI and for the universal health coverage aims to be achievable. The action should include poverty relief and, more broadly, improving the circumstances in which people live and work (Marmot 2013). It should then lead to income distribution and relative deprivation with focus on social functioning and meeting human needs.

This again implies, arguably, the need for appropriate life course public health care policy and interventions particularly targeting higher rates of health-gain among the health-disadvantaged population groups (Graham 2009; Marmot 2013, 2015) like UWR postulated by this study. Marmot (2005; 2013, 2015) argued that where the health status of a country suffers, it means the social arrangements must change. The author thus also acceded to the cross-sectorial character of the determinants of HI, arguing that health status must be the concern of policy makers in every sector of an economy and not limited to health policy makers.

For example, Sweden's new public health strategy envisioned "to create social conditions that will ensure good health for the entire population" (Marmot 2005 p.1103) with five out of its eleven policy domains centered on social determinants. These are, besides health-promoting medical care and behaviors: participation in society, economic and social security; conditions in childhood and adolescence, healthier working life, environment and products. Also, favorable child growth and fewer diarrhea episodes are some health outcomes from Columbia's policy of cash transfers to poorest families with a caveat that beneficiary children must be receiving preventive health care and enrolled in and attending school. Thus, cash transfers, as in the Ghanaian context, plays a complementary role to geographical access to trained HRH who provide the life course public health care to assure the child's fundamental health and developmental potential to then successfully enroll in school and progressively acquire education, wealth and social capital.

Marmot (2005) asserted that the health status of a population is best measure of it thriving rather than economic well-being measures like GNP, average income and consumption patterns. This implies that the author rates health care and other social determinants of health as equally important. The author thus postulated that achieving health inequality reduction calls for a wider social policy.

This study thus focuses on life course public health care as an integrated and wider social resource requiring all sectors to mainstream relevant health-promoting policy actions in their respective sector policies and interventions. The study also postulates that appropriate human resource policy actions in all health-related sectors, with effective inter-sectorial engagement, would deliver equitable life- course public health care to the populations that need it and impact inequalities in health, and other sectors, between the UWR and the AR and GAR.

**Behavioral and cultural determinant model**

Social groups' differences in health have also been associated with health-damaging or health- promoting-protecting behaviors (Bartley 2004, 2007; Bartley and Blane 2008; Steinbach 2016). These are dietary choices, drugs, alcohol and tobacco consumption, leisure time physical activity, immunization, contraception and antenatal service and health messages uptake etc. (Steinbach 2016; GSS 2011; GSS, GHS & ICF International 2014; Quansah et al 2016). Various research and official surveys since the publication of the Black Report, 1980 have repeatedly associated persons in the lowest socio-economic class more with health-damaging behaviors. For example, they are unthinking, recklessness, substance-abusing including alcoholism; smoking, eating high-fat foods and little or no fruits hence experience poor health outcomes (Townsend, Davidson and Whitehead 1986). Some argued that such systematic 'risky' behaviors were consequential to lack of education, low income and low social status and other social position measures (Townsend, Davidson and

Whitehead 1986; Bartley 2004). Quansah et al (2016) also assigned mother's educational level to inequality in child health outcomes in Ghana. According to Bartley, (2004) survey results were the same when repeated for any such behavioral or cultural variable with any of these social position measures. For example, 1998 survey of English smokers revealed that 56.4 % of women in social Class V smoked compared with 29.9% in class I; or 55.4% and 21.6% for men respectively (Bartley 2004). Conversely, people in social class I were more likely to receive health messages, eat sufficient fruits and vegetables, indulge in leisure time exercises and other health-promoting behaviors (Bartley 2004).

According to Steinbach (2016) and Bartley (2004, 2007) however, long-term studies showed that differences in health behaviors explained only a third of social class differences in mortalities. Further, according to Steinbach (2016) findings from evaluations of health behavioral change interventions have rarely linked clear cut health improvement to the behavioral model.

Quansah et al (2016) ranked in order of number of times reported, mother's education as a major social determinant followed by geographical disparities (in access), wealth and poverty and high-dependency. Though the authors acceded that the underlying mechanisms of mother's education's association with child health remained un-established, they argued that similar studies in other developing countries suggested that treatment-seeking-behaviors of educated and uneducated mothers, in terms of health knowledge and autonomy in decision-making may provide useful insights.

This study focused on providing useful insights into the underlying mechanisms influencing child and maternal survival in Ghana (Stavteig 2016). It posited that health literacy or health knowledge of parents is essential components of life-course health care access for good child, mother and general population's health outcomes. Health education/promotion and school

health services by trained HRH are mainstream health care interventions which, if equally accessible geographically (Mutangadura et al 2007; Olorunsaiye 2015), could impact health-seeking behaviors of both uneducated and educated mothers and their health outcomes. Further, immunization uptake rates among different social groups in Ghana, Senegal and other African countries do not show significant differences due to extensive immunization campaigns (Mutangadura et al 2007).

**Psycho-social Determinant Model**

The model postulates that social inequality may affect how individuals feel and this in turn influences the person's body chemistry leading to increase in risk of disease or poor health condition (Steinbach 2016; Hatzenbuehler et al 2013). For example, stress from social circumstances like lack of social support or control and autonomy at work may result in some emotional responses causing corresponding biological changes to increase one's risk of heart disease (Steinbach 2016). Also, stigmatization can result in depression and other mental health-related illnesses (Hatzenbuehler et al 2013; WHO 2016). Other psycho-social risk factors are balance between home and work and between effort and reward.

**Gender relations**

According to Steinbach (2016), several research evidences have shown that people having good relationships with families and friends, and participate in the community have longer life expectancy than those living isolated lives. Lowe, Chen and Huang (2016) assert that qualitative studies on the barriers to skilled births, maternal emergency care and causes of Gambia's high maternal deaths cite women's position in the household as a fundamental cause. Majority of rural Gambian women fail to access obstetric emergency care; and also patronize birth services of traditional birth attendants far more than skilled birth professionals (Lowe, Chen and Huang 2016; White et al 2013; Furuta & Salway 2006). Socio-cultural

factors of gender roles and relations within the household (often disempowering/ marginalizing) therefore significantly affect maternal health in rural Gambia (Lowe, Chen and Huang 2016). The context is the same in other Sub-Saharan African countries and elsewhere in the globe where women in rural settings lack agency. For example, in Mali, also in West Africa, intra-household relations may affect women's health whereby power relations are influenced by constructs at the interpersonal and societal levels. Power relations are in turn affected by social and normative prescriptions related to gender (White et al 2013; Furuta & Salway 2006). Social and normative prescriptions related to gender also influence Ghanaian and other African women's non participation in political and some socio-economic careers (Osei-Assibey 2014). In this context, intra household "bargaining" of gender relations, that is, power relations between man and woman is useful household conceptual insight (Lowe, Chen and Huang 2016; Sen 1990 and Agarwal 1997).

Lowe, Chen and Huang, (2016) accordingly premised that gender related socio-cultural factors impinge intra-household bargaining power and retard maternal health care utilization. The type of society (for example, patriarchic or traditional) a woman lives in and its gender norms and values determine her status within the community and household, thereby inhibiting women access to health care. The dynamics of the relationship between a woman and her partner can also influence access to and control over resources and decision on how to expend resources, which ultimately has implications for maternal health. For example, such gender inequalities deny women access to reproductive health care in Namibia, Kenya, Nepal and India (Namasivayam et al 2012).

Utilising the PEN-3 cultural model, Iwelunmor, Airhihenbuwa, & Gbadegesin (2017) attempted to understand the role of faith and spirituality in the lives of WLHA, why it matters for health-care utilisation, and how it influences childbearing decisions in Nigeria. The authors argue that understanding this link is important for increasing the number of WLHA

who effectively utilise health-care services, and for eliminating new paediatric HIV infections post-2015 (Kalipeni, Iwelunmor & Gridsby-Toussaint (2017).

**Social stigma**

Social stigma, described as "the co-occurrence of labeling, stereotyping, separation, status loss, and discrimination in a context in which power is exercised" (Hatzenbuehler et al 2013) is another dimension. Hatzenbuehler et al (2013) argued that stigma is a central driver of morbidity and mortality at population level. This is because stigma is a socially driven circumstance which produces stress and social disadvantage among the stigmatized group. Stress in turn causes emotional responses and other biological changes with substantial effect on the affected person's health status. Thus, Hatzenbuehler et al (2013) likened stigma to other social determinants of health and health inequalities like socioeconomic status, social relations and education.

The existing literature on stigma has a number of limitations though (Hatzenbuehler et al 2013). First, the relative power and significance of stigma have not been made explicit. Second, the focus is usually on health implications of separate stigmatized statuses (e.g HIV stigma, mental illness or sexual orientation) and examines association between stigma and single outcomes, for example, HIV and self-esteem. The authors postulated the development of stigma theoretical framework to synthesize the disjointed literature and help provide useful insights into the processes that produce health inequalities among stigmatized groups.

Hatzenbuehler et al (2013) postulated that stigma is a fundamental social cause of health inequalities due to its persistent causal association with some social circumstances despite dramatic changes in diseases, risk factors and health interventions. Hatzenbuehler et al (2013) suggested a three dimension criteria for identifying these drivers of persistent health inequalities. First, a fundamental social cause of health influences multiple disease outcomes

through multiple risk factors among several people. Thus, the effects of all its dimensions must be considered to fully estimate its effect on the health outcome. This is because it is equally true that same outcome is also influenced by a host of other factors. Second, it involves having access to resources like knowledge, money, power, prestige and beneficial social capital which can be utilized to avoid risk or minimize effects of disease once it occurs (Hatzenbuehler et al (2013; Dahlgren and Whitehead 1991; Marmot 2013, 2015). Thirdly, fundamental social cause is firmly linked to health inequities over time and space (Hatzenbuehler et al 2013; Dahlgren and Whitehead 1991; Marmot 2013, 2015). The authors explained that this long lasting association is made possible through the fundamental social cause's ability to continually reproduce new mediating factors over time. The authors thus postulated that policies and health interventions must be directed at addressing the fundamental social cause (s) rather than its intervening mechanisms that link to health.

 Osei-Assibey (2014) acceded that regional inequalities persist despite rapid economic growth, socio-political transformation and poverty reduction between 1990 and 2011. For instance, the World Bank report (2011) ranked Ghana 11th out of 66 developing countries in terms of progress made towards achieving reduction of poverty by half by 2015. However, beyond the national level the gains were not evenly distributed across the country hence the gap that separated regions, localities, gender and other social groupings since the colonial era persisted. Osei-Assibey (2014) and Songsore (2011) ascribed root factors behind the persistent inequalities to imbalance in socio-economic power distribution which produces stigmatization and its attendant effects at regional, gender and other social grouping levels.

For example, traditionally and historically, people of the northern origin have been perceived as second class citizens (Osei-Assibey 2014). In the colonial era, socio-economic development was concentrated in the south, specifically in the Ashanti and coastal regions. The northern territory citizens, with virtually no public health care system, were cheap labor

to the industries; and previously served as slaves to the colonial masters' home countries or as "donkor" (meaning servant or slave) on plantations of the Akan ethnic group (Osei-Assibey 2014; Songsore 2011). This colonial legacy has persisted thus labeling and separating the north from the south socio-economically with consequential socio-economic gradient in health (Hatzenbuehler et al 2013).

This study argues that Ghana's human resource for health (HRH) policies' relative contribution to the persistent labeling and separation of the three regions in the north and the attendant persistent health inequality could be more significant than income, education and occupation (Bunker et al 1995; JLI 2004). Accumulated health-disadvantage in the UWR (poorest health outcomes), in the absence of investment for adequate life-course public health care delivery (Steinbach 2016; Dussault & Franceschini 2006), arguably produces stigmatizing effects on its vulnerable population groups' developmental and productivity potential (Russ et al 2014; Government of Ghana 2011). This in turn plausibly produces ripple effects on the other social determinants in terms of accumulated socio-economic status disadvantages and attendant stigmatization (Hatzenbuehler et al 2013). Similarly, Osei-Assibey (2014) observed gender stigma due to cultural, health care, political and economic structures and practices (Lowe, Chen & Huang 2016), some of which have already been discussed above, giving rise to gender-based inequalities. For example, females have limited access to parliament, education, health care, ownership of developmental resources like land. In the case of access to public health care, for example, the geographical inaccessibility of skilled MNCH providers in the regions in the north with the attendant unacceptably high MNCH mortalities and morbidities compared to the southern regions is a major gender and national development concern (Osei- Assibey 2014; Kalipeni, Iwelunmor &Gigsby-Toussaint 2017).

Republic of Ghana (2000) also found social stigma a major cause of pregnant adolescent and young females' inability to access safe abortion care, post-abortion complication care and related counseling services. This results in infertility and in some cases, death (Republic of Ghana 2000). They feel stigmatized because customary values and norms frown upon early sex and teenage pregnancy and therefore resort to the unsafe abortions (Namasivayam et al 2012; White D et al 2013; Davies 1995; Republic of Ghana 2000). Geographical access to trained adolescent sexual and reproductive health providers could mitigate these psychosocial causal factors (Republic of Ghana 2000; Davies 1995). Further, the chances of women dying during pregnancy or birth are closely connected to their social and cultural values and norms (UNFPA 2013; Lowe, Chen &Huang 2016; Bawa et al 2017). For example, as indicated in some northern cultures in Ghana, a pregnant woman choosing to deliver at a health facility is associated with infidelity hence such women deliver at home with all the associated high risks and adverse outcomes.

WHO (2014) posited that certain population subgroups are at higher risk of mental disorders because they are more exposed or vulnerable to unfavorable social, economic, and environmental circumstances also connected with gender (Namasivayam et al 2012; Lowe, Chen & Huang 2016). Disadvantage thus starts from birth and accumulates over life time (WHO 2014; Steinbach 2016; Russ et al 2014). Life-course actions on mitigating mental disorders risk factors or protecting mental health and premised on the principle of proportionate universalism, will reduce mental and physical health inequalities (WHO 2014). This implies that policy actions must be universal but proportionate to need (WHO 2014). The underlying mechanisms explaining the UWR's accumulated health-disadvantage relative to the AR and GAR thus need to be clearly identified and tackled proportionate to need through informed policy actions (Marmot 2016; Graham 2009; Osei-Assibey 2014; WHO 2014).

**Health Selection approach**

Black et al (1982) discussed but quite decisively rejected health selection as one of three causal pathways to social inequalities in health. Health selection researchers argue that to an extent health may exert influence on subsequent changes in social position (Ki 2009). The theory is essentially that of reverse causation: that poor health causes a social selection which leads to the observed association between ill health and low social status (Black et al 1980). In other words, genetic vulnerability leads to illness, which in turn impairs a person's ability to attain or maintain socioeconomic resources. Indeed, according to Ki (2009), the direction of causation between health and social position remained highly contested and still not well understood. Thus, whereas some researchers have argued that health selection affects social position, others suggest a marginal effect of health selection while emphasizing the role of social causation (Ki 2009). Health selection theory can be tested using longitudinal studies which measure pre-morbidity social status and test for an association with subsequent morbidity and mortality (McCartney et al 2013; Ki 2009). McCartney et al (2013) however found that majority of such longitudinal studies have subsequently demonstrated that the concentration of ill-health in lower social groups is explained by pre-morbidity social status rather than any subsequent social slide. The evidence thus indicates that the health selection theory fails to account for health inequalities (McCartney et al 2013; Smith et al 1998; Power and Mathew 1997; Brimblecombe et al 2000).

**Intelligence and meritocracy perspectives**

Recent health selection theory emphasizes two interconnected perspectives of the role of intelligence and meritocracy (Russ et al 2014). The intelligence theory is a slightly different genetic explanation to social class health inequalities. It views genes as strong influences on factors like intelligence or on personality dimensions such as conscientiousness that in turn influence both health and SES.

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Intelligence and health are closely associated (Gottfredson 2004). Gottfredson, (2004) and other epidemiologists have argued that the conventional theories in social sciences have failed to identify the 'fundamental cause' that explains the intergenerational social class inequalities in health outcomes (knowledge, behavior, morbidity and mortality). This is due to the theories' assumption that the material disadvantages of lower SES are primarily responsible for these inequalities, either directly or by inducing psychosocial harm. However, the theories have not explained why the relation between SES and health outcome is not only remarkably general across time, place, disease, and kind of health system but also so finely graded up the entire SES continuum (Gottfredson 2004). Thus, to these authors, that 'fundamental cause', from a synthesis of bodies of evidence, may be differences in general intelligence.

According to Phelan and Link (2005) the validity of general intelligence theory, like others, is also limited to the extent of their consistency with critical facts at stake in explaining the processes causing socioeconomic inequalities in health. The facts are the dramatic improvements in health over the last century and the mechanisms fundamentally accounting for these (Phelan and Link 2005).

The authors further explained that from the social selection explanation, disease-related genes cannot have changed so rapidly and in such a uniformly positive direction as to have created the enormous improvements in population health documented. Similarly, the second social selection explanation in which genes -influenced intelligence in turn influences both health and SES, one would have to posit enormous and implausible gains in these traits over the last 50–100 years to explain the observed improvements in health (Phelan and Link 2005).

Social causation explanations also encounter similar problems demonstrating that the prevalence of stress or adversity has declined dramatically over the last several decades and

that this decline had a powerful impact on illnesses as diverse as heart disease, influenza, and, since 1990, all cancers combined (Phelan and Link 2005). The authors thus concluded that whatever is driving improvements in population health, that factor is not coterminous with the primary factors that have been put forward to explain health inequalities by SES and race.

**Structural Theory Approach**

Structural theory has been the dominant frame for analysis in all of the independent reviews of health inequalities in the U.K (Black et al 1980; Scotish Government 2008; Acheson 1998; Marmot et al 2010). The theory is that differences in the socioeconomic circumstances of social groups across the life-course, cause differences in health outcomes (Krieger, 2001). Thus, differences in income, wealth, power, environment and access are the causal roots of health inequalities. Structural theorists of health inequalities therefore consider competing explanations such as behavior, culture and intelligence as subordinate theories (Macintyre 1997). These theorize potential *mechanisms linking* structural determinants and health outcomes, but fail to identify the causal roots of health inequalities (Macintyre 1997). Supporting the above view is evidence that health inequalities have reduced in periods when structural inequalities have diminished, and have risen when such inequalities have increased (Krieger et al 2008; Thomas, Dorling & Smith 2010). Also, that the health of communities has improved when they have been given more resources by chance (Costello et al 2003); and, most convincingly, that the people with the most resources within any society are always the healthiest, regardless of their behaviours (COSDH 2008). Even where a health condition is clearly attributable to a genetic mutation (such as cystic fibrosis), inequalities in mortality by social class are wide and vary depending on changing contextual factors (Barr et al 2011).

Common to all the dimensions of inequality are power imbalances (Hofrichter 2010). Hence the growing health inequalities are in synchrony with income and power inequalities and are

highly likely to diminish if income and power are redistributed (Krieger et al 2008; Singh & Siahpush 2007). Structural theory holds that the health inequality 'problem' is not caused by the poor, but is caused more fundamentally by the actions of the rich and powerful (Stewart-Brown 2000). Their actions cause denial of the poor and the deprivation of access to favourable socioeconomic circumstances and resources.

This raises important questions about which systems most perpetrate inequalities, who gains from inequalities, and what can be done to reduce them (Krieger 1994). This, in turn, has led to a growing recognition of the importance of the political dimension of broader structural processes in shaping health outcomes. Convincing arguments have linked the proliferation health inequalities to the diminution of broader democratic controls over the preferred priorities of the rich and powerful (McCartney et al 2013). Such growing inequalities of power and health has marked much of the past 30 years in many nations of the world, though not inevitable as shown from past experiences (Hofrichter 2010; Navaro et al 2006; Dorling 2010).

In summary, MacCartney et al (2013) and other structural theorists argued that it is clear that health inequalities will persist unless their actual causes, being socioeconomic circumstances and the political processes and choices become the key focus of action. Continued focus on intervening mechanisms, be it health behaviours or cultures, can at best contribute to overall or average health improvement.

The structural theory yet fails to provide clear evidence as to which socioeconomic dimensions or circumstances are most important root causes of health inequalities and what key actions best address them and meaningfully reduce health inequalities.

**Life Course Determinant Approach**

The life course explanation is a synthesis of the major arguments around the causal roots of health inequalities across and within countries. The approach recognizes the complexity of the phenomenon and focuses on the very fundamentals that engender good health status for the individuals from early formation of life through foundation years, adolescence, adulthood and ageing. It also emphasizes equality of access to evidence-based health care and related interventions and resources that help reduce social class inequalities in health over time. Thus, the theory recognizes health care as a multi-sectoral/disciplinary fundamental cause of health inequality. The approach thus provides the theoretical basis for the focus of this study.

**Foundations of life course theory**

Life course theory evolved from sociology and developmental psychology studies on Polish Peasant life history between 1918 and 1920 (Russ et al 2014). These pioneering studies led to longitudinal approaches to the study of life history (Elder 1998; Arcaya et al 2015). According to Smith and Kuh (2001) as early as the 1930's powerful evidence had been established by British and German Physicians for the lifelong impact of health during childhood. Thus, the expectations of life were determined by the conditions that existed during a child's early years (Smith and Kuh 2001). Moreover, infant mortality rates were also discovered to be directly dependent on the health of the mother, only falling when the vitality of women in Child bearing age improved (Smith and Kuh 2001; JLI 2004; Russ et al 2014).

These important early discoveries, however, went unheeded for decades (Elder 1998; Elder et al 2003) until the early 1980s when health researchers began to examine and clarify the relationship between early life experiences and later health outcomes (Russ et al 2014; Steinbach 2016; Bunker et al 1995; Davey Smith 2003). For example, using midwifery records in the 1920s, in the county of Hertfordshire, Dr. David Barker demonstrated associations between birth weights, early weight gain and the prevalence of chronic adult

illness (Barker et al 1989, Barker 2003, 2007; Lule et al 2018). These relationships were confirmed in other cohort studies mainly in Europe, New Zealand and Scandinavia (Eriksson 2011; Osmond et al 2007; Lule et al 2018). Meta-analysis also confirmed an inverse relationship between birth weight and adult all-cause mortality (Risnes et al 2011; Lule et al 2018). Decades of massive studies similarly connect prenatal and early life exposures with later health outcomes (Ben-Shlomo and Kuh 2002; Gluckman et al (2008); Wadsworth (1999).

Lule et al (2018) for example, observed an inverse relationship between birth weight and BP in later life in Western settings. The evidence however remains uncertain in the African context where causes of low birth weight are different (Lule et al 2018). Lule et al (2018) concluded from systematic reviews of available evidence on low birth weight and later health outcomes in Nigeria, Gambia and other African countries that further research is required for more conclusive evidence.

Life course informed models of health introduced a new perspective to understanding how health and disease develop across lifespan (Russ et al 2014). The model thus fundamentally challenges the simple biomedical and the more recent multiple risk factor-models (Russ et al 2014). The U.S Federal of Maternal and Child Health Bureau (MCHB), the National Institutes of Health and other state agencies and organizations in recent years thus consider the implications of the life course theory for health research, policy and practice. The model has also shaped several recent Institute of Medicine reports and the Healthy People 2020 used as basis for new strategic plan for MCHB; WHO report on social inequalities in health, and several landmark policies in U.K (Acheson et al 1998; Aylot et al 2008; Foresight Mental Capital and Well-being Project 2008; Marmot 2010; Committee on Breast Cancer and the Environment, Institute of Medicine 2011; Committee on Leading Health Indicators for

Healthy People, 2020). Life-course theory also informs newborn and child health interventions and programmes of UNICEF in Ghana (GHS & UNICEF 2011).

**Life course health development (LCHD) Model**

The LCHD model is a synthesis of the multidisciplinary models of health and wellbeing and health inequalities (Russ et al 2014). The model thus accepts health inequalities (HI) as a complex concept. The LCHD posits that health is an emergent capacity of human beings that dynamically develops over time, in response to multiple nested, and ever changing genetic, biological, behavioral, social and economic contexts (Russ et al 2014).

Second, risk and protective factors influence the development of bio-behavioral regulatory systems during critical and sensitive periods of development. Third, individual and population health is also influenced by timing and sequence of biological, cultural and historic events and experiences. The LCHD has accordingly informed the theoretical approach to development of measurements of children's health and health inequalities (Russ et al 2014; Institute of Medicine 2004; Bartley 2004). Further, the model advocates multiple potential ways for optimized health development and indicates that health practice and policy go beyond avoidance of disease to the promotion of positive health at all stages of life (Steinbach 2016; Russ et al 2014; Institute of Medicine 2004; Davey Smith, Ben-Shlomo & Lynch 2002).

Steinbach (2016) asserts that health reflects patterns of social, psycho-social and biological advantage and disadvantage experiences of individuals over time. Thus, the chances of good health or poor health depend on a child's experiences in-utero and in early childhood. Steinbach (2016) and PHE (2014) argued that disadvantage accumulates between childhood and adulthood hence a child who experienced poor home conditions is more likely to be occupationally disadvantaged in adulthood. Bartley (2004) also asserted that on the basis of

the established social gradient in health, the life-course model offers a most likely explanation of health inequalities. This is because health in adult life is the result of complex combination of circumstances occurring over time (Davey Smith, Ben-Shlomo & Lynch 2002 in Bartley 2004). Steinbach (2016) indicated that regardless the need for detailed longitudinal data in life-course investigations, studies have shown that disadvantage accumulates over time.

**LCHD and MCH Research**

Expert researchers have considered the policy and practice implications of LCHD (Russ et al 2014). According to Russ et al (2014), the LCHD model suggests five main components of research activities that are needed,

- The importance of biological embedding

- The role of risk and developmental protective factors

- The health significance of extended developmental time frames

- Multiple determinants of health outcomes and

- The representation of health development as a functional trajectory

Each component explains the link between early life events and experiences and future health and disease.

**The importance of biological embedding**

Biological embedding refers to the processes by which experiences early in life directly interacts with and alters neural, endocrine and immunologic systems and even genetic expression thereby affecting the course of human development (Hertzman & Boyce 2010). Herztman & Boyce (2010) assert that biologic, neurologic, epigenetic and physiologic mechanisms are known to play significant roles in biological embedding. However, little is known about which mechanisms are most important and their degrees of reversibility or

whether certain key factors function as "triggers" to "cascade" future reactions (Russ et al 2014). Russ et al (2014) discuss five key mechanisms with potential role in biological embedding. They include;

(a) The role of candidate systems

(b) Epigenetics

(c) Learned behaviors

(d) Genetic imprinting and intergenerational effects

(e) Adaptive foetal responses

Candidate systems are those with the most potential as transducers between the social environment and human biology (Russ et al 2014). They are therefore biologically plausible "stress transducers". Various forms of excessive stress have also been shown as early risks of future health development (Russ et al 2014). Researchers have focused on four candidate systems. These are the hypothalamic-pituitary axis (HPA) (secretes cortisol); the autonomic nervous system (ANS) together with epinephrine and norepinephrine; development of memory and executive function in the prefrontal cortex; and systems of social affiliation involving the amygdala and locus coeruleus with higher order cerebral connections mediated by serotonin and other hormones.

The HPA remains best documented transducer (Russ et al 2014). The authors assert that rat pups developed permanent changes in their HPA over the rest of the life course when removed from their mothers for brief periods during a narrow window of days early in life. In other words, separated rats showed higher basal cortisol levels, blunted response to stress, memory loss and cognitive deterioration in as early as 2-years (equivalent to old age in humans) than those rats not separated as pups (Hertzman and Boyce 2010). Recent research also began to examine neural correlates with deprivation and effects of adversity on human brain architecture and function (Noble et al 2012). The researchers conclude that the quality

of early maternal and child bond is shown to affect HPA function and behavioral response to stress while social class differences in cortisol levels have been demonstrated in primary and secondary school children in the U.S.A.

Epigenetic studies also discount early health models' notion that dissociates environmental factors' influence from the genome thus qualifying genetic factors as fixed at birth and unchangeable (Kuzawa & Thayer 2011). On the contrary, these studies now show that environmental factors can alter gene expression through mechanisms other than fundamental DNA sequence (Kuzawa & Thayer 2011; Low, Gluckman & Hanson 2011). For example, the rat pup experiment demonstrated that handling and maternal grooming affected methylation of a region of DNA that regulates both HPA and higher-order executive brain function (Kuzawa & Thayer 2011; Low, Gluckman & Hanson 2011; Meaney 2001). Further experiments demonstrated that changes in early nurturing behaviors were transmitted inter-generationally resulting in pups that received less handling by their mothers being, in turn, less attentive to their own offspring (Meaney 2001; Lester et al 2011).

The researchers argue that though these animal studies cannot assume to generalize the findings to human beings, they help raise critical research questions regarding the importance of critical or sensitive periods during cognitive and neurological development (Michels & Waterland 2012). There remains, however, knowledge gap as to when and the duration of these periods of heightened sensitivity and responsiveness and what point effects may, if at all, become permanent (Michels & Waterland 2012).

Human studies now explore whether well-established risks like experience of social diversity during early childhood are driven by similar epigenetic mechanisms. Early results found stronger association of adult blood methylation profile with childhood than socioeconomic position (Borghol et al 2012). This suggests that early environmental influences may

influence the evolvement of well-defined and long-lasting epigenetic patterns (Borghol et al 2012). Recent studies have also associated birth weight with development of neuropsychiatric disorders (Breslau 1995).

Similarly, scientists are exploring how DNA methylation of genome parts of the human placenta, as the master determinant of the intrauterine environment, could affect neurobehavioral outcomes (Borghol et al 2012; Maccani & Marsit 2009). For example, a study of 186 placentas from healthy newborn infants shows association between placenta genome methylation and infant quality of movement and infant attention (Bromer et al 2012). Also, according to Hochberg et al (2011) there is still much to explore regarding maternal diet and supplementation, epigenetically altered genes, development and disease.

These studies thus signal the importance of exploring whether epigenetic modifications are reversible and identifiable epigenetic markers in childhood predetermine future adult health or disease (Russ et al 2014).

Learned behaviors, according to some experts, also partially explain health development over life time. Gluckman, Hanason & Buklijas (2010) and others, for example believe that health promoting and health damaging behaviors such as eating habits and physical activity of parents are keenly observed by their young children. The young also tend to behave in similar manner as they grow. Secondly, such behaviors are resistant to change, suggesting some biological influence (Cordero et al 2012). The authors found that male rats not exposed to any social stressors, for example, are aggressive to female rats; and the behavior is also trans-generational.   How behaviors are learned, whether epigenetically or via other biological mechanisms and whether they are inter-generationally transmissible, however, remains a knowledge gap and priority (Russ et al 2014).

Imprinting of genes and their intergenerational effects on health over time is being explored as the extent to which environmentally-induced biological changes can be transmitted across future generations remains unclear (Heijmans et al 2009). For example, though it is certain that epigenetic patterns acquired during development are generally stable in somatic cells through adult life, these patterns must be reset in germ cells and embryos, if developmental pluripotency is to be achieved (Heijmans et al 2009). The authors note also that the process involves two "waves" of demethylation that are completed during the peri-conceptional period. According to Russ et al (2014), there is growing evidence that the severity of conditions such as autism, epilepsy, schizophrenia and bipolar disorders varies depending on which parent transmits the disease susceptibility. However, no specific imprinted genes have yet been implicated in these diseases (Russ et al 2014). Thus, Reik, Dean & Walter (2001) argue that the developmental dynamics of epigenetic deprogramming and reprogramming events, their susceptibility to environmental exposures and their implications for health through the life course remain poorly understood.

Fetal and infant adaptive responses to cues from the mother about her health and physical state may also initially induce long-term risk of disease (Wadsworth 1999). Barker (2002) also asserted that nutrition-poor intrauterine environment results in compromised fetal growth, during which metabolic and hormonal systems are "set" to make best use of scarce nutritional resources, that is, the "thrifty phenotype hypothesis.

**Risk and developmental protective factors**

Whereas some research focus on single health risk factors, the LCHD model posits that risk and developmental protective factors are multiple and appear to operate throughout the lifecourse, continually shift health trajectory in positive and negative directions (Russ et al 2014; Hertzman & Boyce 2010).

LCHD theory thus considers the effects of multiple risks and protective factors on health outcomes over time (Russ et al 2014). Thus, the most prevalent chronic diseases (diabetes, hypertension, depression etc.) in adult life appear to result from the combined effects of multiple risk factors many of which are not linked to any specific disease or condition (Hertzman & Boyce 2010).

The LCHD model therefore recognizes health and human development as a balance between gain and loss or developmental protective and risk factors, growth and deterioration and positive and negative influences (Hertzman & Boyce 2010; Russ et al 2014). This implies that where positive influences dominate throughout the lifecourse, trend in health outcome is likely positive. According to Arcaya et al (2015) access to appropriate health care is health protecting and thus on life course basis positively influences health outcome.

**Health significance of extended developmental time frames**

LCHD approach to MCH research focuses on precise measurement of timing of exposures to social and cultural risk factors regarding emergence of disease (Russ et al 2014) and health protective factors. LCHD model therefore acknowledges the importance of intergenerational factors for health and human development. According to Hochberg et al (2011) individual's health is the outcome of both developmental history that begins at conception and evolutionary history spanning hundreds of thousands of years. Thus, offspring biology appears to be responsive to experiences encoded in maternal biology and her epigenome. Information is thus signaled from mother to child through transfer of nutrients and hormones across placenta and via breast milk (Kuzawa & Thayer 2011; Hochberg et al 2011). Kuzawa & Thayer (2011) and Russ et al (2014) suggest that the evolutionary processes tend to lessen impact of transient fluctuations in early experiences on infants of long-lived species like humans. The implication for MCH therefore is that humans need long-term health interventions to change outcome (Kuzawa & Thayer 2011; Russ et al 2014).

**Health development as a functional trajectory**

Health development represents a functional trajectory (Ben-Shlomo & Kuh 2002). The LCHD model accepts that early life experiences affect functional outcomes decades later in mid and adult years (Ben-Shlomo & Kuh 2002; Wadsworth 1999). However, outward manifestations of a disease or condition may or may not be observable in the intervening years (Ben-Shlomo & Kuh 2002; Wadsworth 1999). For example, it remains uncertain whether children who will develop cardiovascular disease in mid or adult years can be identified through clinical assessment of factors like blood pressure and cardiovascular reactivity or biomarkers like cholesterol and C-reactive protein (Halfon et al 2012).

Gottesman & Gould (2003) however notes increasing interest in the concept of endophenotypes, which are measurable components along the pathway between distal genotype and clinically apparent disease state. Much of these studies are neuropsychiatry-related (Gottesman & Gould 2003). According to (Brotman et al 2008), children and adolescents at risk of future bipolar disorder have been shown to have early facial emotion labeling deficit compared with the control group.

Russ et al (2014) concludes that the endophenotypes identification is an opportunity for targeted preventive interventions for children that may be on the pathway to a poor health outcome, though many questions remain about their mutability.

**Multiple determinants of health outcomes**

LCHD model acknowledges that most health outcomes are the results of multiple determinants from different domains (Russ et al 2014). Several studies also now

acknowledge that social risks play important roles in the development of health and disease across population groups. Thus, a social gradient has been demonstrated for almost all diseases whereby health outcomes decline gradually as one moves from the most to the least privileged groups in both developed and developing world (Hertzman & Boyce 2010; Martinson 2012).

Russ et al (2014) also emphasized the overwhelming evidence that social circumstances early in life influence multiple lifelong health outcomes notwithstanding one's social position in adult life. For example, even pre-school children have been shown to respond differently to stress depending on position within the class hierarchy (Hertzman & Boyce 2010).

Wilkinson & Pickett (2009) and Siddiqi et al (2007) argued that policies aimed at flattening the social gradient upward could be more efficient in improving population health than efforts to improve outcomes among high-risk groups without addressing income inequality. Hertzman et al (2010) and other experts also suggest that interventions supporting early child development may be key to reducing health and social inequalities. The optimal content of these interventions however remains uncertain.

The concept of multiple determinants of health outcomes posits that social risks interacts with environmental, psychological, biological and genetic systems to influence health and developmental outcomes in complex, multidimensional ways (Russ et al 2014).

**MCH Research Implications**

The identification and disruption of the mechanisms that expose early life to social risks potentially reduce health and social inequalities (Russ et al 2014). This is because the disruption mitigates the negative effect of social risks on adult function and social position. It also potentially breaks intergenerational social disadvantage.

This means the design and conduct of MCH studies become critical. First, the influences of these multiple dimensions must be segregated. Second is determination of which influences are most important; and thirdly, identifying the ways that intervene to promote protective determinants while reducing risks factors. Achieving such research outcome however remains a major challenge (Russ et al 2014).

The authors suggest detailed measures of objective and subjective social risks together with detailed genetic, epigenetic and physiologic measures from participants' biological pathways overtime. Further, statistical models will need to account for relationships among variables that are non-linear, dynamic and transactional (Russ et al 2014). The authors conclude that results from such studies could lead directly to effective interventions. For example, a proposed policy for provision of universal pre-school experience could have health and developmental benefits such as cognitive stimulation and early learning experience but also risks associated with separation from mother.

In summary, the LCHD theory suggests that timeous provision of appropriate life course MCH services can better explain positive fetal and infant health development over time than other socio-economic factors. Such positive early life chances in turn determine largely the positivity or otherwise of health outcomes of individuals at the adolescent and adult stages of life. Second, the LCHD approach to positive health development and health inequality reduction also tends to support the focus of LMICs on quality PHC service provision. This is because health care accessibility, coverage and quality remain the overarching limitations of their health systems (Gwatkin 2017).

**MCH Services and Early Life Chances: Policy, Strategies & Interventions**

Several studies hold a coherent view that reproductive, newborn, maternal and child health (RNMCH) inequalities are reducing in most countries (Gwatkin 2017; Victora and colleagues

2017). Studies of health service coverage inequalities mainly found that RNMCH coverage inequalities have been decreasing over past 20years due to faster progress among poor, rural and deprived populations (Cesar Victoria and colleagues 2017; Mutangadura et al 2007).

Alam et al (2015) measured maternal mortality reduction rate ratios and differences, as well as relative and absolute concentration indices in order to examine within-country geographical and wealth-based inequalities. Thus, inequalities in the utilization of antenatal care (ANC), facility-based delivery (FBD), and modern contraceptives (MC) in six African countries were measured. The study found that the countries which have made sufficient progress towards maternal death reduction (i.e. Ethiopia, Madagascar, and Uganda), ANC use increased by 8.7, 9.3 and 5.7 percent, respectively, while the FBD utilization increased by 4.7, 0.7 and 20.2 percent, respectively, over the last decade (Alam et al 2015). By contrast, utilization of these services either plateaued or decreased in countries which did not make progress towards reducing maternal mortality (Alam et al 2015).

Utilization of MC increased in all six countries but remained very low, with a high of 40.5% in Zimbabwe and low of 16.1% in Cameroon as of 2011(Alam et al 2015). Ross (2015) also attributed low family planning utilization and geographical and wealth-based inequalities to the service being at a teething stage in its history, and accessibility to the well-off populations and over-served areas in sub-Saharan African.

In general, relative measures of inequalities were found to have declined overtime in countries making progress towards reducing maternal mortality (Alam et al 2015). In countries with insufficient progress towards maternal mortality reduction, these indicators remained stagnant or increased. Absolute measures for geographical and wealth-based inequalities remained high invariably in all six countries.

The increasing trend in the utilization of maternal care services was found to concur with a steady decline in maternal mortality. Relative inequality declined overtime in countries which made progress towards reducing maternal mortality (Alam et al 2015).

This means in Sub-Saharan Africa, inequalities in RMNCH outcomes reduce with equitable increasing accessibility and utilization of RMNCH services over time. Reducing maternal mortality and geographical and wealth-based inequalities through the universal health coverage approach to RMNCH service provision also mirror the reducing infant and child mortality and inequalities reported by several MCH studies (Alam et al 2015; Restrepo-Mendez et al 2016). Thus, the life course health development approach to achieving UHC of quality PHC services, particularly RMNCH, underscores the relative importance of essential health services to overall population health improvement and health inequality reduction.

**Universal Immunization Services**

Immunization service coverage inequality within African countries has declined due to faster progress among the poor, deprived, distant and vulnerable populations or communities (Mutangadura et al 2007; Gakidou et al 2002; Cesar Victoria and colleagues 2017; Gwatkin 2017; Restrepo-Mendez et al 2016). For instance, Restrespo- Mendez et al (2016) found, in a coverage trend study involving African countries, that Madagascar and Mozambique made the greatest progress in improving levels of full immunization coverage over the last two decades, particularly among the poorest quintiles of their populations.

Sex-related differences in full immunization coverage were of less than three percentage points in each of 59 countries and only achieved statistical significance in Azerbaijan, Belize, India, Mali and Somalia (Restrepo-Mendez et al 2016).

Accelerated national immunization campaigns, outreach and routine home visits and clinic activities ensured accessible and quality immunization services for pregnant women,

newborns and children below five years in these communities (Mutangadura et al 2007; Gakidou et al 2002; Olorunsaiye 2015; Restrespo- Mendez et al 2016).

In small but substantial proportion of countries, however, RNMCH inequalities are increasing (Gwatkin 2017). For example, between countries in Africa are inequalities in mean full immunization coverage varying from 11.4% in Chad to 90.3% in Rwanda (Restrespo-Mendez et al 2016). National averages also tend to hide pro-rich and pro-urban inequalities in full immunization coverage when such data is reported (Restrespo- Mendez et al 2016; Gakidou et al 2002).

In most of these countries, decline in health status and health service coverage among deprived populations partly account for the increasing inequalities (Gwatkin 2017; Restrespo-Mendez et al 2016). For example, according to (WHO, 2013) an estimated 21.8 million infants worldwide are still not being reached by routine immunization services. In 2013 most WHO regions reached 80% of their target children with the various immunization antigens but coverage fell short of the 2015 goal of 90% particularly Africa recording 75% and 77% in South-East Asia (WHO 2013; UNICEF 2014).

Many barriers exist to achieving good vaccination coverage, including a lack of parental education, low income, poor access to health facilities and traditional beliefs (Canavan et al 2014; Akmatov and Mikolajczyk 2012; Gyimah 2007; Antai 2009). Achieving fast and equitable routine immunization coverage requires multi-country studies that use the same types of stratification to document and understand the inequalities in vaccination coverage at both national and regional level; and data on the percentages of children who receive the full set of standard vaccines recommended by WHO (WHO 2014, 2013; Jani et al 2008; Requejo et al 2015).

Restrespo et al (2016) measured full immunization coverage and inequalities of the 86 low- and middle-income countries in terms of socioeconomic, urban-rural and sex variables. Only 18 countries showed pro-poor inequality in coverage represented by negative slope indices; though only 5 showed values significantly different from zero (Restrespo et al 2016). Nigeria showed the greatest pro-rich inequality in full immunization coverage, followed by Pakistan, India, Turkey, Madagascar, Yemen, Cameroon and Liberia. The study summary indicators also indicated that, only four countries showed distinctively pro-poor inequalities in their full immunization coverage: Gabon, Gambia, Mauritania and Uzbekistan. However, Gabon and Mauritania had relatively low national levels of coverage (Restrespo et al 2016).

The study observed that regardless sex, wealth or urban/rural residence, inequalities in full immunization coverage varied substantially between and within the study countries. Inequalities related to wealth and urban/rural residence appeared to be ubiquitous and persistent and to be larger, in general, than the corresponding sex-related inequalities (Restrespo et al 2016; WHO 2014, 2013). Although some countries have made substantial progress in reducing such inequalities, some other countries have seen such disparities increase.

The authors conclude that the *Global vaccine action plan 2011–2020* ( i.e. universal access to immunization) will only be achieved if the relevant health workers, policy-makers and stakeholders can: (i) develop and implement strategies for reaching those who are difficult to reach and for promoting the need for full immunization among those who have contact with health services for other interventions; (ii) expand vaccination programmes to include underserved groups; (iii) improve the quality of the monitoring of immunization coverage; (iv) use monitoring data to ameliorate programme performance; and (v) explore additional cross-sectoral strategies – particularly in those low- or middle-income countries with the worst inequalities in coverage. The improvements in coverage and equitable access to routine

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immunizations achieved by some Latin American countries may be useful guides (Restrespo et al 2016; WHO 2013, 2014)

Alkenbrack et al (2015) explored how equity of reproductive health and maternal health service coverage differs across 74 countries, and the policy factors associated with a country's progress, or lack thereof, toward more equitable service coverage. Using Demographic and Health Survey service coverage data and multivariate analysis of relative and absolute equity trends over 1990- 2014 period, the relative importance of political commitment to health; governance and prepayment was examined (Alkenbrack et al (2015).

The results revealed that higher education and greater political commitment (measured as the share of government spending allocated to health) were significantly associated with higher equity of service coverage. Conversely, GDP per capita and better governance were not significantly associated with equity. In conclusion, equity in reproductive health and maternal health service coverage has improved but varies across countries and overtime (Alkenbrack et al 2015). Inequalities in access and outcomes explain the clarion call for targeted reforms within the broader context of universal health coverage (UHC) (Alkenbrack et al 2015).

**Family Planning Coverage**

Several reproductive health indicators have improved for entire populations but few analyses exist on trends in gap over time between the poor and rich (Ross 2015). Ross (2015) accordingly tracked wealth quintile-based improvements in the equitable distribution of reproductive health indicators especially for contraceptive use, in 46 low- and middle-income countries. Data from national population-based surveys conducted between 1990 and 2013 were used. The study focused on the gaps between the poorest and richest quintiles in the earliest and latest survey rounds across a number of reproductive health indicators related to family planning, fertility desires, antenatal care, and infant and child mortality. Also tracked

are improvements in the absolute levels of contraceptive use by the poorest quintile. Using gap changes decomposition and multivariate analysis, the study showed how the gap is diminishing or increasing based on the wealth quintile; and the relationship of the gaps and of contraceptive use by the poor, to national family planning program efforts. For example, gap reduced from 20.4 percentage point difference to 15.4 point difference (Ross 2015); and even bigger gap reduction where family planning programs are stronger. Rich-poor gap also reduced for antenatal and other reproductive health indicators; as well as gaps in infant and child mortality declining by about one-third (Ross 2015).

Ross (2015) however, found a mixed pattern in sub-Saharan Africa, with the gap actually increasing in some countries with strong programs. Plausible reasons include that family planning in the region is generally at an earlier stage in its history, and so programs may initially be reaching better-off clients, especially in urban areas. To promote additional equity, programs should emphasize efforts to increase access to voluntary family planning services to the least well-off, including those in rural and peri-urban areas (Ross 2015; Victora and colleagues 2017; Mutangadura et al 2007; Olorunsaiye 2015; Gakidou et al 2002; Bawa et al 2017).

Also, a study assessing access to health services in 7 African countries found that averagely, the richest 20% received well over twice as much financial benefit as the poorest 20% from overall government health expenditures (Gwatkin 2002; Osei Assibey 2014). The reverse situation was found in 7 Latin American study countries (Gwatkin 2002). Between the richest and poorest countries, data comparisons show declining infant mortality inequality in absolute terms; but a rising trend in relative terms (Gwatkin 2002). Life expectancy inequality, from data comparisons however shows a decline in both absolute and relative and relative terms (Gwatkin 2002).

According to Gwatkin (2002), it is now commonly agreed that improvements in public health are not determined solely by improvements in health services. A broader approach is needed that influences development policy more generally and includes interventions in other sectors such as water and sanitation, and conflict resolution. The author thus proposed targeting, participatory approaches to health service planning and delivery, protecting the poor from the financial consequences of illness, and establishing health objectives in distributional terms as effective approaches for tackling inequality in health provision. Marmot (2013) also argues that improvement of access to primary care is a worthy and necessary goal; but, by itself will not revolutionize global health, nor reduce large health inequalities. Marmot (2013) asserts that the noble PHC and UHC goals are attainable if their accelerated actions incorporate complementary accelerated actions on the social determinants of health inequalities and population health improvements. For example, by the WHO definition of UHC, other inputs to improve health equity and reduce health inequalities include social protection, early years care, good employment, and power, among others.

Victora and colleagues (2017) in a study of 64 LMIC thus assessed the contribution of the poor and rural populations to national composite coverage gains in essential reproductive, maternal, newborn and child health (RMNCH) interventions. The authors asserted that national gains were accelerated by important increases among poor and rural mothers and children. For example, at an annual national coverage gain rate of 0.82 percentage points in RMNCH across all countries, households in the two poorest wealth quintiles experienced 0.99 percentage point increase compared with 0.68 among the three wealthiest quintiles. Coverage also increased more rapidly annually in rural (0·93 percent points) than urban (0·52 percent points) areas.

Inequalities were however found to persist despite the progress thus underscoring the need for accelerated program efforts among these population segments if the SDGs would be attainable (Victora and colleagues 2017; Ross 2017; Bawa et al 2017; Olorunsaiye 2015).

A study by Bendavid (2014) found faster decline in child mortality among the poorest households than the least poor households. The study monitored changes in child mortality using information gathered in 85 surveys from 929 224 households and 1 267 167 women living in 54 countries over the period 2002 and 2012. Multivariate analyses suggest that convergence was associated with good governance ($P \leq .03$ for 4 governance indicators: government effectiveness, rule of law, regulatory quality, and control of corruption) (Bendavid 2014). The author concluded that overall, under-5 mortality in low- and middle-income countries has decreased faster among the poorest compared with the least poor between 1995 and 2012, but progress in some countries has lagged, especially with poor governance.

**Deliveries by Skilled Birth Attendants**

In Burkina Faso, facility-based births increased by 30% in resource-poor Ouargaye district after intensive community-based interventions improved supply and community uptake of quality MCH services (Hounton et al 2009; Graham et al 2008). This implies improvement in geographical accessibility and demand creation in skilled birth services. Only 10% increase in institutional births was recorded in the comparison district, Diapaga (Hounton et al 2009). In Burkina-Faso, Mauritania, Guinea, Ghana and Senegal various interventions to remove financial barriers to access to quality obstetric and perinatal care had also been implemented with varying degree of success (Ouédraogo et al 2008; Renaudin et al 2007; Ndiaye et al 2008; Witter et al 2007 and Witter et al 2008).

Bawa et al (2017), Gwatkin (2017), Olorunsaiye (2015) and Bhutta et al (2009) however asserted that, all these strategies need supply-side efforts for increased quality and organisation of care to work. In Ghana, though the fee exemption for delivery modestly impacted access to care with an 11.9% increase in Central Region and 5% in the Volta region (Penfold et al 2007), cost of care to clients (i.e $155 to $111 for Caesarian section and $17 to $13 for normal delivery) was not reduced to zero (Witter et al. 2008; Olorunsaiye 2015; Mutangadura et al 2007; Bawa et al 2017). Further, service quality, before and after the fee exemption was poor (Ansong-Tornui et al 2007) particularly women in resource-poor and remote communities with geographical accessibility challenges (Olorunsaiye 2015).

A major lesson from these studies was that there is no magic bullet (Bhutta et al, 2009). In other words, the choice of an intervention depends on the context and regardless the intensity of work done, it never addresses the challenge on its own (Russ et al 2014; Bhutta et al 2009). Second, consideration of the negative or positive impact of an intervention on other segments of the health system is important. For example, removal of user fee in South Africa increased access to curative services but at the expense of some preventive services (Bhutta et al 2009).

In addition, an integrated approach to perinatal health is critical: newborn health is intimately linked with maternal health (Bhutta et al 2009; Bawa et al 2017). Obstetricians, midwives, paediatricians, health centre staff therefore all need to think and act holistically for the couple 'Mother and Child' and not only for one of them (Bhutta et al 2009; Bawa et al 2017; UNICEF 2014; UNICEF and GHS 2011; Zere et al 2012) in service provision. This is because integrated evidence-based packages of care have been defined at different levels of services but their implementation remains inadequately managed (Gupta et al 2011; Buck and Maguire 2015).

This suggests that MCH outcome indicators among the poor and deprived populations can still improve and narrow the inequality gap with proportionate universalism in quality MCH service provision (Olorunsaiye 2015; WHO 2016; JLI 2004).

Other studies investigated variations in country experiences and health status inequalities which were limitations in the studies conducted by Victora and colleagues (2017). These studies, including Wagstaff and colleagues, also found positive trends in both service coverage and coverage inequality reduction in most countries (Wagstaff and colleagues 2014). In 28% of countries however, coverage inequalities had risen and in 24% of the countries, service coverage among the poorest 40% of population has declined (Wagstaff and colleagues 2014).

**Accelerating Health equity: Universal Health Coverage of MCH Services**

Further, Fuchs (1998) argued that availability of core basic levels of health care in modern times '…contributes greatly to life expectancy' and globally is even reducing mortalities in less developed countries some of which have very low living standards. Citing such basic cost-effective medical technology as vaccines and anti-infectious drugs, Fuchs (1998) asserted that beyond the required basic health care, any additional inputs of medical care (not life-course public health care) have little effect. Fuchs (1998) implies that barring human errors in health care delivery, individuals and groups' access to basic quantum and quality life-course public health care needs could assure good health and long life. This further implies that such core basic public health care is equitably delivered across individuals and population groups, particularly the most vulnerable and health- disadvantaged (Olorunsaiye 2015; Bawa et al 2014).

Health Care thus ranges from reproductive and sexual health, including family planning, through pregnancy and delivery to post-delivery, child and adolescent and adult health care

(Fuchs 1998; Steinbach 2016; Gwatkin 2017; Victora and colleagues 2017). Thus, whether the individual lives long or not depend on the state of health of the womb that bore them (Fuchs 1998; Borghol et al 2012; Maccani & Marsit 2009; Bromer et al 2012). If therefore the mother was born healthy and continued to access quality life course core basic health care including health-promoting life styles, the offspring could most likely enjoy good health and long life. This is granted that the life-course core basic health care was also accessible to them and utilized (Bromer et al 2012; Steinbach 2016; Borghol et al 2012). According to Fuchs (1998), such an approach requires effective collaboration and cooperation between the health provider and health clients.

According to Marmot (2015), the present health gap in MCH is unjust and all must clamor for immediate change. Social disadvantage (not only poverty) is the cause, with profound effect on developing brains and limits children's intellectual and social development (Marmot 2015). Thus, a social gradient in intellectual, social and emotional development exists- the higher the social position of families, the more the children flourish and score better on all development measures (Marmot 2015, 2010; Russ et al 2014). For example, the Flynn effect refers to the substantial increases in IQ scores that have occurred over time attributable to the broadly conceived environment (Dickens and Flynn 2001). The evidence shows clearly that social circumstances influencing parenting affect children's ability to reach potential and are the major determinants of the social gradient in early child development (Kelly et al 2011). The latter in turn profoundly affects children's subsequent life chances- school performances and adolescent health, not being in employment, education, or training, stressful working conditions that damage mental and physical health and adult health (Marmot 2010). This implies that a causal thread through these stages of the life course, starting from early childhood through adulthood to the aged stage and to inequalities in health.

According to Marmot (2015), social injustice is disempowering. It deprives people of control over their lives. In low-income countries where people struggle to feed their children and without access to clean water and sanitation, their disempowerment is material, plus a sense of being at the mercy of forces beyond their control (Marmot 2015). Children therefore die for lack of access to life course health care and other material necessities of life (Ross 2017)

Avoidance of such detrimental stratification in early child development, calls for equality in social circumstances across social groups. These include equal access to life course reproductive, newborn, MCH and adult health care at all life stages (Steinbach 2016). According to Marmot (2015), the best time to start tackling inequalities in health is with equity from the start. But intervention at any stage of the life course can make a difference (Marmort 2015).

Further, not all differences in early child development can be linked to social environment (Marmot 2015). Heritability of cognitive ability has been substantiated by contemporary studies thus this condition would not change were the conditions under which all children are born, live, grow and age to even equalize (Marmot 2015; Pinker 2002; Russ et al 2014)

In Ghana and sister African countries, UNICEF's programs adopt and advocate for life-course approach to health policy and essential RMNCH health intervention delivery particularly for children. Preventive services such as immunizations, particularly against the six childhood killer diseases, are thus free for all children up to age five and for all pregnant women at the point of use (GHS and UNICEF 2011). GHS and UNICEF (2011), Mutangadura et al (2007) and other studies, as indicated, found immunization services equitable between the lowest and highest wealth quintiles in Ghana and even more equitable within the lowest quintile (Ross 2017; Restrepo et al 2016; Bendavid 2014). There is equity

in the corresponding childhood diseases reported in Ghana (GSS 2011; GDHS 2014; Mutangadura et al 2007).

Antenatal care (ANC) services including screening or diagnostics, immunization for mother, and essential routine hematinic are also free at the ANC clinics (GHS and UNICEF 2011; GHS 2008, 2009, 2010, 2011; Olorunsaiye 2015; Mutangadura et al 2007). Besides, Prevention of Mother-to-child Transmission of HIV infection services are free for pregnant women aimed at delivering newborns free from HIV from the infected mother (NACP 2006).

Further, the Ghana Community based health planning and service (CHPS) policy and strategy aim to achieve universal health coverage for all people living in Ghana. The approach, also adopted by Ethiopia, Nigeria, Rwanda, and other African countries brings quality essential primary health care services into households and communities through Community Health Officers' routine home visits and outreach activities (GHS 2005, 2016; Nyonator et al 2005; Olorunsaiye 2015; Mutangadura et al 2007).

These life course services include health and nutrition promotion and education, immunization, family planning counseling & services and minor treatment (GHS 2016, 2005; Olorunsaiye 2015; Mutangadura et al 2007; Nyonator et al 2005;). CHPS services are thus planned, organized and delivered with, by and for the community of up to 3,000 population through trained village health volunteers and technically supervised by the trained CHOs or CHNs using the defined informed community structures particularly the community health committees (GHS 2005, 2016; Nyonator et al 2005; Fuchs 1998; Gwatkin 2002). The CHPS strategy thus covers the entire country with special focus on the rural and deprived communities but also deprived urban settlements (GHS 2005, 2016; Nyonator et al 2005).

In addition, the goal of the Ghana Adolescent sexual and reproductive health policy was to assure transitioning of healthy and productive adolescent and young populations into

responsible, healthy and productive adult life and promote national development (Republic of Ghana 2000). The policy was in response to a huge unmet public health care need of these population groups constituting nearly 75% of national population over four decades (GSS 1993, 1998, 2000). Despite being among the most socially and sexually active groups, they have limited knowledge of and geographical access to sexual and reproductive health care and other services. The services are basically health education, counseling for informed healthy sexual and reproductive life and free at the point of use. Only family planning devices attract quite negligible token fee and for which a law is currently in place for national health insurance fund to cover though yet to be enforced (GSS, GHS and ICF International 2015; GHS 2013).

The adverse consequences have been high teenage pregnancies and maternal deaths due to unsafe abortion complications, prolonged obstructed labor; early marriages and school drop-out rates. In addition, trauma associated with teenage pregnancy and birth (prolonged and obstructed labor) also affect the health and developmental potential of both teenage mother and newborn, if they survive (UNFPA 2013; Republic of Ghana 2000). Further, Davis (1995) found that comprehensive sex education providers are public health campaigns, formal school health programs, care-givers and parents. Though the care involves instructions on emotional relations and responsibility relating to a wide range of human sexuality and health, adolescents and young children in some cultures are denied sex education by their parents on grounds of cultural taboos (Davis 1995; Republic of Ghana 2000; UNFPA 2013 Olorunsaiye 2015; Mutangadura et al 2007).

Geographical access to trained HRH could thus assure RMNCH care provision at clients' door-step or convenience and also help mitigate such cultural barriers (Olorunsaiye 2015; Mutangadura et al 2007). One way to achieve this is using evidence-based traditional approaches in health promotion/education, involvement of traditional stakeholders and

adolescents in the policy and strategies development, implementation, monitoring and evaluation processes (Bawah et al 2017; Nyonator et al 2005; Gwatkin 2017, 2002,). The approach assures ownership and commitment to quality service uptake (Bawah et al 2017; Nyonator et al 2005; Gwatkin, 2017, 2002).

Besides, in Ghana, Sweden and Colombia, target populations' access to and use of preventive health care services is a requirement for social protection cash transfer beneficiaries (Marmot 2005; Jaha & Sika-Bright 2015; Agyemang et al 2014). These cash transfers in principle target those who need such social protection services to access appropriate life-course health care as a resource (Gwatkin 2002, 2017). In practice, however, they are either left out or encounter various barriers accessing the services (Jaha & Sika-Bright 2015; Marmot 2005; Osei-Assibey 2014; Ross 2017).

Jaha & Sika-Bright (2015) and Agyemang et al (2014) found that in Ghana, one of the conditions for the LEAP cash transfer is enrolment of family members of beneficiary households onto the NHIS. Part of the cash is thus used to meet the NHIS registration fees. In so doing, they invest into their health for health services cover up to 95% of disease conditions reported at the outpatient department level, in-patient, deliveries, diagnostics, medicines and all emergencies (NHI Act 2003, Act 650; Apoya & Marriot 2011). The NHI package thus covers these medical care services for children, orphans, pregnant women, adults, the aged, the indigenes and persons with disability (NHI Act 2003, Act 650; Apoya & Marriot 2011).

The package does not however cover general routine health screening for early diagnosis and treatment particularly of non-communicable diseases including diabetes, cancers and hypertension (Ministry of Health-Ghana 2016; NHI Act 2003, Act 650). The NHI package also does not cover MCH services provided by the CHOs or Nurses during home visits and

outreach services because of the NHIS's focus on facility-based care (Ministry of Health-Ghana 2016). This is however currently under consideration at policy level.

**Evidence-based Effective Maternity Interventions: Low-resource Countries**

Bhutta et al (2009) and Campbell and Graham (2006) assert that there is a strong consensus among international organizations and academia on a long list of evidence based effective maternity interventions. FIGO (2009) however defined a shorter list of essential interventions for maternity care in low-resource countries. These interventions (table 3.2), including basic essential obstetric care, are based on the principle to offer quality pre-natal, intra-partum and post-partum care by skilled health personnel at the first level (Bhutta et al 2009; FIGO 2009). An effective and affordable referral system including hospital for delivering timely comprehensive essential obstetric and perinatal care as a back-up system is critical (Bhutta et al 2009; Bawa et al 2017).

**Table 3.2: Evidence for interventions to prevent stillbirth**

| Behavioural and nutritional interventions before and during pregnancy | Prevention & treatment of medical disorders and infections during pregnancy | Screening and monitoring during pregnancy and labour | Intra-partum care interventions |
| --- | --- | --- | --- |

*The five interventions of benefit recommended for inclusion and scaling up in programmes*

| | Heparin for certain maternal conditions including clotting disorders | | Emergency obstetric care packages including caesarean section† |
| --- | --- | --- | --- |
| | Syphilis screening and treatment† | | Planned caesarean section for breech deliveries*,† |
| | Insecticide treated bed nets (ITNs) during pregnancy† | | |

*The nine interventions with some evidence of impact that can be included in programmes but further research recommended*

| Multiple micronutrient supplementation during pregnancy | Management of intra-hepatic cholestasis during pregnancy | Foetal movement counting for high risk pregnancies | Elective induction of labour for post-term pregnancies |
| --- | --- | --- | --- |
| Balanced protein-energy supplementation during pregnancy | Anti-helminthic treatment† | Umbilical artery Doppler velocimetry for high risk pregnancies | |
| | Anti-malarials in malaria-endemic areas† | Intrapartum cardiotocography with or without pulse oxymetry | |

Source: adapted from Bhutta et al. 2009;

*Recommended only where access to referral level care is good.

†Clear benefit for maternal and/or neonatal health

At country level, however, intervention implementation remained a challenge (Bhutta et al 2009). For example, a huge number of clinical staffs are not informed on or not convinced by the evidence, or who do not comply with evidence-based interventions for various reasons

(Khalil et al 2005; Harvey et al 2007; Richard et al 2008; Waiswa et al 2008; Karolinski et al 2009; Mfinanga et al 2009; Stanton et al 2009; Turner & Short 2009).

Bhutta et al (2009) and JLI (2004) assert that maternal and perinatal mortalities reduce with increased access to and uptake of appropriate care. This also means the care is effective and delivered with quality (Bhutta et al 2009). According to the authors, promoting access and appropriate care uptake involves two possible approaches: influencing the demand and/or supply of care as in Figure 3.1 (Alam et al 2015; Restrepo-Mendez et al 2016).
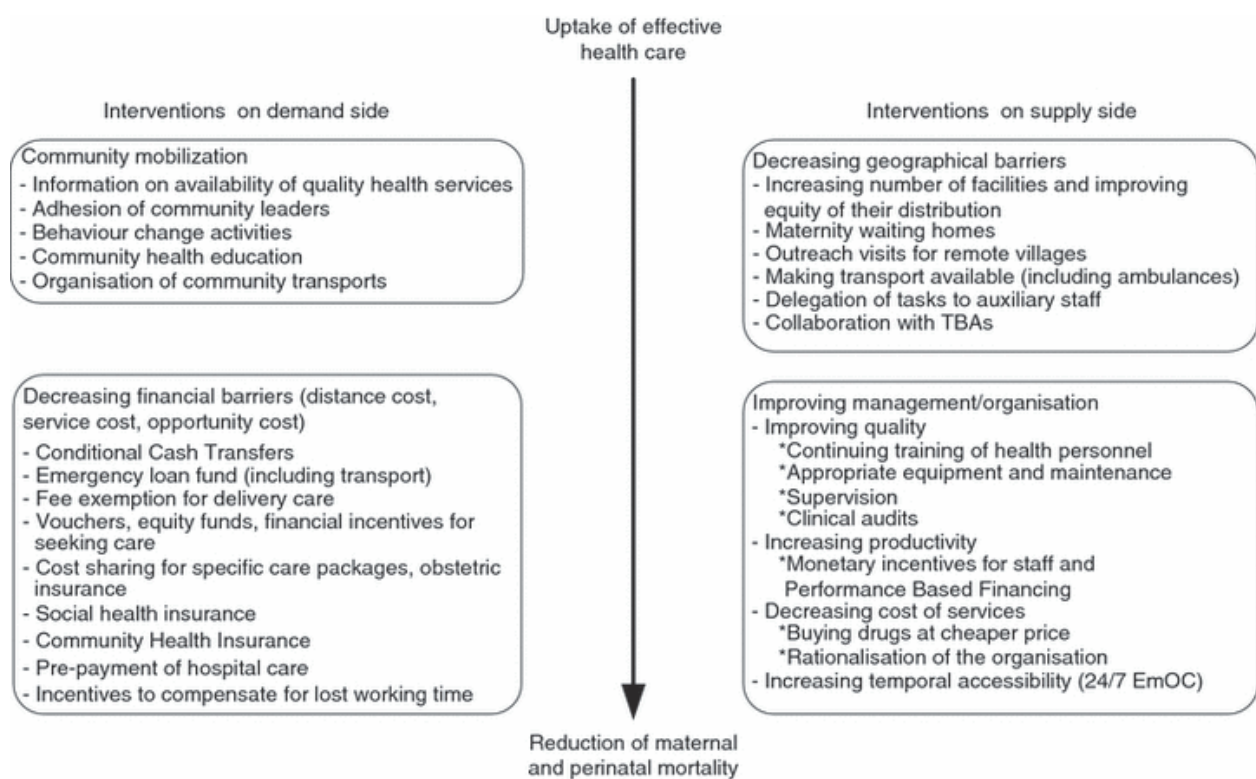


**Figure 3.1: Approaches to increasing access: Supply and demand side Model**
**Adopted from Bhutta et al. (2009)**

In Ghana, other complementary UHC health improvement interventions aimed at accelerating health equity and reducing RMNCH outcome inequality include water and sanitation (Gwatkin 2017, 2002), telemedicine and referral services. Also inclusive are NHIS financial support for CHPS, Health Centres and maternity homes and community emergency transport arrangements; and active community and local government participation in community-based

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health care provision (Nyonator et al 2005; Gupta et al 2011; Osei-Assibey 2014; Agyeman et al 2014; Bawa et al 2017).

There are necessarily interactions between supply- and demand-side interventions (Bhutta et al 2009). For example, maternity waiting homes are considered as 'supply', because they improve access to maternal health care. However, they will achieve their objective only if they attract women living in remote areas (demand creation) (Bhutta et al 2009; Olorunsaiye 2015).

There is a link between barriers to seek care (financial, geographical, perception of staff, poor attitude and low perceived quality of care) and the extent and the quality of supply (distribution and qualification of staff, basic and continuing training, outreach services, capacity to reach all the communities, capacity to adapt to the local culture; and compliance with care protocols). Both are important – a high coverage of poor pregnancy and delivery care is not necessarily better than an excellent but barely accessible health service (Olorunsaiye 2015;
Waiswa *et al* 2008; Karolinski *et al* 2009; Mfinanga *et al* 2009; Stanton *et al* 2009; Turner & Short 2009).

However, quality of care should be first developed, because it would not be ethical to improve access to known bad health service (Bhutta et al 2009). Both quality of care and access are in turn driven by the quality and numbers of health personnel in the right locations (Olorunsaiye 2015; Bhutta et al 2009). Dussault and Franceschini (2006) also emphasized that access to good-quality health services is crucial for improvement in many health outcomes. Thus, heath goals and targets cannot be achieved if vulnerable populations do not have access to skilled personnel and other necessary inputs (Dussault and Franceschini 2006).

**Health SDGs Attainment in LMICs: UHC approach, MCH & PHC Focus**

Achieving universal health coverage (UHC) necessitates recruitment and appropriate allocation and retention of health care professionals across country in both urban and rural setting (Mkoka et al 2015).

The challenge in Low-middle income countries is lack of requisite skilled maternal neonatal and child health professionals like midwives, doctors, physician assistants, and social welfare and community development officers in remote communities in LMICs (Bawa et al 2017; Olorunsaiye 2015; Zere et al 2012, Dovlo 2007). This is explained by the determinants of the numbers; mal-distribution and regulatory barriers of the skilled personnel required dealing with the geographical and related barriers to these life course public health and necessary clinical care interventions (Zere et al 2012; Gupta et al 2011; Dussault and Franceschini (2006).

According to Manzi et al (2012), Gupta et al (2011), Dussault and Dubois (2003), and Tangcharoensathien et al (2015), health inequities particularly in Africa and other developing countries including Ghana are explained by human resource policy factors. For example, lack of institutional capacity to produce and retain the right numbers, skill mix, equitable distribution and performance management as well as effective coordination between human resource management and policy needs and regulation are but a few of the limitations.

Thus, in Ghana, there are pronounced health inequalities in maternal and newborn mortalities between the UWR and the AR and GAR because of yawning human resource for health and financial resource gaps (Zere et al 2012; Osei-Assibey 2014). Zere et al (2012) found that skilled health professionals like doctors, midwives and nurses were in acute short supply at health facilities in the deprived regions of the north. Zere et al (2012) and GHS and UNICEF (2011) thus found inequities in obstetric care, particularly maternal emergencies at CHPS

zones, health centres and district hospitals due to lack of services of midwives and doctors and other skilled HRH professionals in these facilities and communities.

Alam et al (2015) also concede that stronger health systems especially for quality PHC services in communities are required for achieving the higher and more ambitious SDGs targets than the MDGs. This pre-condition is particularly critical for MDG-off-track countries who failed to provide and sustain financial access to quality services for communities, especially the poor (Alam et al 2015). According to the authors, UHC as an indispensable SDG health target to achieving an improved level and distribution of health requires a significant increase in government investment in strengthening primary health care - the close-to-client service which can result in equitable access. SDGs must thus be matched with redoubled government efforts to strengthen health delivery systems, produce and retain more and relevant health workers, and progressively realize UHC (Alam et al 2015).

Further, with the increased fiscal capacity in most developing countries, aiming at long-term progress toward UHC is feasible if there is political commitment and if focused, effective policies are in place (Alam et al 2015). This assertion contradicts the argument by Manzi, et al (2012) and Dussault, and Dubois (2003) that developing countries lack the capacity to produce and retain necessary HRH. Gwatkin (2017) and WHO (2016) also found that though African countries need 2.8million additional qualified health workforce for UHC to be attainable, governments lack the fiscal capacity to recruit them. The apparent contradiction could however be resolved where governments demonstrate the political commitment to prioritize health by increasing the proportion of health budget to national GDP (Alam et al 2015) and investing into UHC.

United Nations member states extensively negotiated and signed unto the inspirational SDGs recognizing that health is a precondition for, an outcome of, and an indicator of all three

dimensions of sustainable development (Alam et al 2015; United Nations General Assembly 2012). Thus, all the health-related MDGs have accordingly been carried over to the SDGs. This implies that though other social determinants play important complementary role in health improvement and inequality reduction, health equity through UHC of essential PHC services in LMICs can be more important.

Indeed, achieving a favorable UHC outcome requires strengthening physical access by improving geographical coverage of health services, and financial access by extension of financial risk protection mechanisms as two essential parallel synergistic interventions (Balabanova et al 2013). Evidence base indicates that the higher the coverage of skilled birth attendance (SBA), the smaller the rich-poor inequalities (Neal et al 2015; JLI 2004). For example, in countries with very low SBA coverage, that is, less than 30%, the rich-poor gaps are large, at around 60 percentage points; while a smaller gap, less than 20 percentage points, is observed in countries having high coverage (JLI 2004; Neal et al 2015; Balabanova et al 2013). This again implies that with equity in RMNCH service provision in LMICs through UHC policies, strategies and interventions, rich-poor and endowed-underserved population health inequality gaps can narrow progressively.

For example, the evidence is emphatic that geographical areas with 100% SBA coverage, as in Thailand, have no gaps whether by maternal education or by socio-economic status (Neal et al 2015; Kongsri et al 2011). Thus, in Thailand, universal coverage of MCH services resulted in rapid reduction in the rich-poor gap of child mortality between the 1990 and 2000 censuses (Vapattanawong et al 2007)

Other health care access barriers include staff attitudes, lack of financial and non-financial incentives and other poor working conditions, socio-cultural beliefs, attitudes and practices,

and regulation among others (Gupta et al 2011; Dovlo 2007; Dussault and Franceschini 2006).

According to Dussault and Franceschini (2006) and Frenk (1992), accessibility of health services is a multidimensional concept that refers to geographical, economic (affordability), organizational and cultural factors (acceptability) factors that can facilitate or hinder use of services. The authors assert that reduction in maternal mortality depends on access to skilled care at birth and during pregnancy. Frequently, however, the services are not available at reasonable distances; or clients cannot afford or Health Providers are available for limited hours or put up unfriendly behavior towards clients. Thus, how health services are organized and delivered can largely influence their acceptability, use and the resulting outcome (Alam et al 2015; Dussault and Franceschini 2006).

**Theory of HRH Distribution**

Evidence abound that it is harder to recruit and retain health care professionals in rural and deprived regions compared to the urban and endowed areas (Serneels et al 2007; Kojo and colleagues 2018). Reason is that the former are characterized by challenges. Among primary health care workers in Nigeria, these include lack of basic amenities, poor living conditions, inadequate infrastructure and poor career support (Lawan, Amole and Khayi 2017). Studies on health care professionals' retention in remote areas have shown career-related education programs; compulsory rural service programs; financial incentives, and personal and professional support services initiatives can be important (WHO 2010). Lack of support for dealing with isolation and living in difficult environment has thus been an obstacle for staff retention (Kojo and colleagues 2018 and Lehmann, Dieleman and Martineau 2008) [yet to be applied to discussion chapter]. Economic, normative, standard location and average distance circles are some theories for understanding health professionals' retention dynamics.

**Economic View**

There are two main approaches to understanding HRH distribution dynamics, namely economic and normative (Dussault and Franceschini 2006). The economic theory views the distribution of health professionals as a function of the health care labor market (Dussault and Franceschini 2006). In-balances will thus occur whenever there is disequilibrium between demand and supply in the market in a given geographical area. The economic theory states that as real wages increase, more health professionals are willing to be employed. More people will then enter health professions and in the long run lead to a new equilibrium and balanced distribution of health professionals (Dussault and Franceschini 2006; JLI 2004; Gupta et al 2011; Dovlo 2007; Manzi et al 2012; Alam et al 2015). In short, imbalanced distribution of health professionals can be addressed by creating competiveness in the labor market (OECD 2002).

It has been shown though that economics is not the only factor influencing health professionals' decision to locate their practice (OECD 2002; BCMA 1998; Hammer & Jack 2001). It has also been argued that health care labor market is not a competitive market due to substantial entry regulations, information asymmetries and other market failures (OECD 2002; Hammer & Jack 2001).

**Normative View**

OECD, (2002) from the normative view point defines imbalances as a comparison of a given staff density with some standard or social norm. The reference norm or standard can be as defined by professional organizations, government policy or simply using a particular region as a comparator (OECD 2002). Imbalanced HRH distribution arises where there are variations between the staff density and the standard across a geographical area (OECD,

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2002). The normative theory thus emphasizes a rational and long-term planning for human resources for health (HRH).

The theory is criticized for its subjectivity in the establishment of these standards as well as methodological issues relating to definition of scope of practice of providers (Gupta et al 2011; Dussault and Franceschini 2006). For example, Gupta et al (2011) in a study of 68 developing countries found different definitions of Physician Assistant, nurse and midwife between countries. Professional organizations' established standards or regulations account largely for these variations (Gupta et al 2011; Dussault and Franceschini 2006). Gupta et al (2011) found that while some of the countries allowed these professionals to perform signal functions such as neonatal resuscitation, others did not.

Another limitation of the normative approach is its use of full-time equivalent (FTE) ratio to population as it fails to account for productivity of personnel and population needs which can vary significantly from country to country or within country (Dussault and Franceschini 2006).

The two approaches are complementary (Rutkowski 2003). The need and supply side of the labor market is addressed by the normative perspective while the economic view tackles the demand and financial incentives thus matching demand to supply (Rutkowski 2003).

**Standard Location View**

The theory predicts and explains the practice location decisions of health professionals (OECD 2002; Dionne et al 1987; Bolduc et al 1986). It holds that the professional will choose the practice location with the factors that maximize their utility. The concept of utility thus assumes that the attractiveness of a given practice location is influenced by a number of factors (OECD 2002). The authors found income as only one of such factors. Other factors are quality of leisure, distance to central cities, average income and presence of a hospital

(Dionne et al 1987). The more these alternatives are present in a given geographical area, the most likelihood of the presence of at least one Physician. Grytten et al (2000) found that younger physicians in Norway preferred quality leisure time to higher income. Also, physicians reporting high workload desired relocation while those with fewer patients would not.

**Average Distance Circles**

HRH distribution is also understood through analysis of average distance circles. The approach maps the changing mobility of professionals over time (Baer et al 2000). The model assumes interaction between individual factors to locate practice and a given structure such as medical education (WHO 2010). This model thus helps with understanding the implications of a community-based training on health care system's ability to retain professionals; or the changing mobility of male and female professionals and career history of different health professions (Baer et al 2000).

**Geographical in-balances in Skilled HRH distribution: Determinants**

Access to good-quality health services is crucial for improvement in health outcomes (Dussault and Franceschini 2006; JLI 2004; Dovlo 2007; Gupta et al 2011; Olorunsaiye 2015; Bawa et al 2017; Kojo and colleagues 2018). For example, reduction of maternal and new born mortalities depends on access to skilled care at birth, before and during pregnancy and perinatal periods (Koblinsky et al 1999; Tinker and Koblinsky 1992; Gupta et al 2011, Zere et al 2012; Olorunsaiye 2015; JLI 2004).

This means access to skilled care is a continuum and a long-term health intervention and therefore a LCHD approach to health outcome improvement at individual and group levels (Bunker et al 1995; Russ et al 2014; Zere et al 2012; Steinbach 2016).

Unfortunately, the services are often not available at reasonable distance or they are available but clients cannot afford. Also, as already indicated, accessibility may be limited by organizational factors, including limited hours of presence of staff, unfriendly behavior towards clients and cultural barriers among others (Dussault and Franceschini 2006).

Kojo and colleagues (2018); Zere et al (2012); Gupta et al (2011); Dussault and Franceschini (2006); JLI (2004) and Bunker (1995) and focus on the geographical dimension of access; and on one of its critical determinants: availability of qualified personnel. For example, JLI, (2004) asserted that maternal mortality reduction responded best to the availability of skilled birth attendants like doctors and midwives. In Africa and other developing countries HRH availability is in turn determined by a host of factors including production and retention capacity (Manzi et al 2012; Gupta et al 2011) but most importantly the mal-distribution (Gupta et al 2011; Dovlo 2007; Zere et al 2012; JLI 2004).

Dussault and Franceschini (2006) further emphasized HRH availability as most important determinant of access and impact on population health than just well-balanced distribution of physical health infrastructure and other factors. Thus, investment in well-balance distribution of infrastructure is worthwhile; and will impact population health only with assured well-balanced distribution of qualified HRH (Dussault and Franceschini 2006; Alam et al 2015).

Geographical distribution of HRH refers to spatial allocation of health personnel (Dussault and Franceschini 2006). Balanced or imbalanced distribution is measured using a norm such as population/personnel ratio; or a more sophisticated need-based method.

This means geographical distribution reflects the services profile in type, quantity and quality of a given location. Thus, equity of life course health care service (services according to needs), of efficiency (surpluses/shortages), of services effectiveness and, importantly, user-

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satisfaction are dependent upon the HRH distribution pattern between and within locations (Dussault and Franceschini 2006).

Variations in geographical distribution of HRH are caused by individual, community and governmental decisions (Dussault and Franceschini 2006). These are in turn influenced by personal, professional, organizational, economic, political and cultural factors (Dussault and Franceschini 2006). Again, these factors are interconnected and influence each other in many ways (Dussault and Franceschini 2006; Kojo and colleagues 2018). For example, low remuneration and poor working conditions result in resistance to reposting; and also promotes rural-urban migration (Ferrinho & Van Lerberghe 2000). Health professionals thus concentrate in urban areas to seek career advancement and private sector jobs and practice opportunities; thus, compounding public-to-private brain-drain (Ferrinho & Van Lerberghe 2000). Van Lerberghe et al (2002) thus concluded that the inadequate socioeconomic development of rural and deprived areas compared to urban areas is ultimately the main constraint to achieving a balanced distribution of HRH.

Unbalanced distribution of HRH between and within countries is a worldwide, longstanding and serious problem (Dussault and Franceschini 2006). According to the authors, in both rich and poor nations, the urban and endowed locations have a large disproportionate share of the numbers and quality of health professionals to the detriment of the rural, remote and deprived areas. The OECD conference of experts on human resource planning from 20 countries underscored HRH mal-distribution as a major problem (Dussault and Franceschini 2006).

In low-income countries where the major health problems are prominent in the remote and rural areas without skilled HRH, the urban and well-endowed areas report having too many professionals, particularly doctors (Chomitz et al 1998). In Cote D'Ivoire, doctors in Abidjan, the capital city remain unemployed while the rural and deprived areas lack (Chomitz et al

1998; CREDES, 1996). Also, in Mexico, whereas rural posts lack physicians, 15% of physicians remain unemployed, underemployed and inactive in urban locations (WHO 2000).

Vast and difficult terrains, remote locations with poor communication with the rest of the country and few or lack of amenities for health professionals and their families are some reasons for doctors' reluctance to locate or relocate to such areas in these countries (Dovlo 2007; Chomitz et al 1998). In Brazil, government efforts to expand coverage of the population by public services significantly narrowed the rural-urban geographical equity ratio in 1995 compared to 25-years earlier (Chomitz et al 1998; Machado 1997). But, the low incomes of the population have discouraged settlement of doctors in the poor regions (Machado 1997). In Ghana, 1087 of the 1247 (87.2%) general physicians in 1997 worked in the urban regions though 66% of the population lives in rural areas (WHO 1997; Ghana Health Service 1997).

Imbalanced distribution of HRH can contribute greatly to health outcome inequalities (Cercone & Antoine 2001; JLI 2004; Dussault and Franceschini 2006). For example, in Mexico, life expectancy in the rural areas is 55years compared with 71years in the urban areas. Infant mortality is 50/1000 live births compared to 20/1000 live births respectively (Cercone & Antoine 2001)

The attractiveness of urban areas to health care professionals largely account for the imbalanced HRH distribution (Van Lerberghe et al, 2002). Attraction determinants include the social, cultural and professional advantages (Van Lerberghe et al 2002). Specifically, large metropolitan areas offer more opportunities for career and educational advancements, better employment prospects for health care professionals and their family (spouse), easier access to private practice (particularly in countries where public sector salaries are low),

lifestyle related services and amenities and better access to educational prospects for their children (Chomitz et al 1998; Machado 1997).

**Strategies to correct barriers and effects of in-balances: Successes and Failures**

Kingdon (2015; 2011), Bhutta et al (2009) and other social policy researchers conclude that achieving accessibility to quality MCH service and health inequality reduction is certainly a matter of political will. This will, however, must be driven by a sound strategy that balances the demand-supply interventions equilibrium, implemented on long-term basis and sufficiently flexible to be responsive and relevant to local context and changing broader environment.

Major effects of overstaffing in urban areas include underuse of skilled HRH with corresponding increasing total cost of health care system and external 'brain drain' of professionals in search of employment opportunities abroad (Dussault and Franceschini 2006).

Several strategies have been tried to prevent or reduce the mal-distribution of HRH (Dussault and Franceschini 2006). Most of these focused on reforming the medical education system and on creating incentives to attract and retain health professionals in otherwise unattractive areas (Dussault and Franceschini 2006; Kojo and colleagues 2018; Alam et al 2015). Other strategies include using community health workers and new cadres of health workers; rural recruitment and training; integration of training, education and service; new educational tools; regulatory and administrative measures; financial and professional incentives and better national policies and international agreements. Unlike poor countries, rich countries employ transfers by air and telemedicine as some effective strategies to mitigate barriers and effects of HRH mal-distribution (Dussault and Franceschini 2006).

According to the authors, financial incentives alone are usually insufficient to ensure that deprived and remote areas are and remain adequately staffed.

Mitigating the effects of the inequities on health status through pro-underserved and remote areas staffing strategies has been a daunting task for policy-makers. There have been some successes but also failures of these strategies (Dussault and Franceschini 2006). Countries such as Brazil, Cuba and Thailand however chalked some successes by adopting systematic and comprehensive approach to tackling the issues (Dussault and Franceschini 2006).

Key determinants of success include: the length of time the policy or strategy remains on the national priority agenda and long-term political commitment (Kingdon 2011, 2015; Dussault and Franceschini 2006). Also, both health services and relevant sectors integrate their efforts. For example, contributions from education, local government and communities are crucial.

The caveat however is the ability to reconcile different expectations from the varied stakeholders and achieve common ground and consensus (Kingdon 2015, 2011; Buck & Maguire 2015). Indeed, Egger and Adams (1998) and Dussault and Dubois, (2003) cite active involvement of the key actors in the policy formulation and implementations processes as an outstanding crucial factor for policy success. Kuganab (2007, 2009) found marginalization of the trade unions and other key actors in Ghana's 2007-2011 HRH policy and National Health Insurance policy processes as significant explanation for policy failure.

Negative policy outcomes are also explained by lack of resources; misunderstanding of cultural, social and political contexts and resistance from professional and social groups. Decentralization and economic crises potentially cause conflicts between health organizations, political forces, professional associations and workers (Dussault and Franceschini 2006). For example, professional associations are powerful actors and can feel threatened by policy changes that affect their long-established privileges. This usually results

in delay or reversal of changes (Perez 1999; Kuganab 2007, 2009). Stable social and political environment cannot be overemphasized (Dussault and Franceschini 2006). For example, in Ghana no graduates were produced from the universities in 1977, 1984 and 1995 due to political unrest and lecturers' strikes (Dovlo 1998). Similar situation pertained to Mali in 1993-94 and Senegal in 1986 and 1992 (Dovlo 1998), both sister West African countries of Ghana.

Adams (1999) emphasized that system of incentives to address HRH in-balances are central level strategies pursued by government. Their degree of success can largely depend, however, on factors not related directly to the health sector. For example, poorly targeted financial incentives can have undesirable effects as in Thailand and Mexico. Here, rather than promote rural work, financial incentives resulted in early exit of professionals from rural areas by enabling them to pay off the fine to break the compulsory service (Dussault and Franceschini 2006; Adams 1999). In such instances, according to the authors, complementary measures may add effectiveness to incentives. For example, to mitigate the effects of public-private brain drain, Ghana, Bahrrain and Nepal allowed after official hours private practice. The measure in turn raised concerns about the quality of care and productivity in the public sector (Adams 1999). To mitigate the effect, the nations concerned implemented some standards and controls.

According to Dussault and Franceschini (2006), strategies that have increased social acceptance and recognition of rural health professionals have often been successful. Good examples include institutionalizing social recognition awards and support groups for rural health professionals. Such social networking and support mechanisms for acceptance and appreciation of these personnel can improve their morale and retention in these practice locations. Thus, the positive image encourages and supports young graduates to accept such postings.

The foregoing discussions thus emphasize that each nation's health system and human resource situation is specific. The HRH issues involved are also multidimensional and interconnected and require clear identification and understanding in relation to the specific national context. Dussault and Franceschini (2006) thus assert that evaluation studies are crucial so as to understand the interrelationships between the determinants of geographical imbalances and strategies to correct them.

The individual factors tend to have immediate influence on the geographical distribution of HRH. Organizational and community environment factors have intermediate effect between the broader environmental factors and individual decisions. According to the authors, interventions to influence these factors for the desired results are complex and require adequate time to impact the range of factors.

Dussault and Franceschini (2006) further assert that it is easier to change the recruitment criteria at a medical school to alter the profile of future doctors than to change the incentive system. This is because the incentive system might be under the control of an agency outside the health sector. For example, changing social attitudes towards women may well fall within the core competence and mandate of other sector (s).

The authors conclude that strategies that can effectively address geographical imbalances focus on integrating individual and organizational strategies within their broader context. For example, it is valid to cite low salaries and poor working conditions for refusal to practice in rural areas but that is simplistic (Dussault and Franceschini 2006). This is because these are traced to cumbersome and bureaucratic and civil service structures; which, in turn, are fundamentally caused by larger social, political and economic deficiencies. These are political instability, dominance by small ruling class, a culture of clientelism and poor

institutional capacity. The approach can enhance or limit government's capacity to implement corrective interventions.

In summary, health inequalities in general are caused by interconnected multiple social determinants of health. Unlike the socio-economic, cultural/behavioral, materialist; psychosocial, structural and health selection theoretical models that tend to emphasize dominance of single causal pathway, the LCHD approach to health inequality recognizes the interplay of multiple determinants. It posits health equity at all stages of human development with emphasis on life-course reproductive, maternal and child health care that enhances early life chances. Positive early life health outcomes in turn are shown to positively associate with adolescent and adult blood methylation, educational achievements and social position in later life. LCHD and related studies show overwhelming evidence that in the context of low-income and middle-income countries particularly in Africa geographical accessibility to quality life course MCH care can better accumulate health advantage and reduce MMR and NMR inequality over time. This implies there is political commitment to invest adequately in community-level provision of evidence-based life-course RMNCH interventions and related social resources using the UHC and PHC approach. These are mainly long-term interventions. The requisite skilled HRH are also attracted and retained particularly in remote and deprived locations using matrix of proven incentive packages appropriate to the Ghanaian context.

**CHAPTER FOUR: METHODOLOGY**

**Introduction**

This chapter explains and justifies the methodology and research methods employed to test the study hypothesis and to ask and answer the interrelated research questions. The study approaches and processes with necessary justifications are discussed to support the validity of the study results, conclusions and evidence.

The study tested the hypothesis that there is a strong relationship between human resources for health (HRH) policy implementation practices and the health outcomes inequality trends (JLI 2004) between the UWR in the north, and the AR GAR in southern Ghana. For resource and time limitations, neonatal and maternal health outcome indicators were selected as basis for comparison and analysis. Maternal and infant mortalities are internationally accepted proxies for a nation's health and development status (Marmot 2005, 2015; WHO CSDH 2008). Women and children are also economically and socially more vulnerable and excluded in Ghana and other African countries (Osei-Asibey 2014; Quansah et al 2016; Olorunsaiye 2015). Moreover, health outcomes inequalities are more pronounced in maternal, neonatal and child health (MNCH) care between the north and south of Ghana (Zere et al 2012; GHS and UNICEF 2011; Gupta et al 2011; Quansah et al 2016; Osei-Assibey 2014) and therefore provided more scope and depth to the study.

There is an adage that a journey of thousand miles, begins with the first step taken. In public health discussion of child health, the importance of the first 1000 days of life for long life and well-being is now well understood. Thus, in addition to the study postulating equitable geographical access to quality life-course public health care and necessary clinical services for all age groups irrespective of their geographic, demographic and socio-economic characteristics, a healthy newborn and mother form the critical mass of healthy and

productive adult years and long-life expectancy (Russ et al 2014; Ross 2015; Steinbach 2016).

Arguably, the healthy child and adult can then acquire the needed cultural, social and economic capital to mitigate other social determinant-related poor health risks and outcomes. The study's potential to generate high level interest and support is also enhanced as a critical national development issue especially with regards to Ghana's progress towards its goal of a healthy productive population that reproduces itself safely for national development and SDGs attainment by 2030 (Ministry of Health-Ghana 2017). This has long term significance.

In addition to the MNCH outcome indicators given in the preceding chapters, over 50% of hospital emergencies in the north of Ghana are maternal, attributable to geographical access, quality care and health care system functionality factors (Olorunsaiye 2015; Bawah et al 2017 Mutangadura et al 2007; Saleh 2013). These include delayed household and community level decisions to access early health care, in turn due to lack of appropriate community and private transport resources (predominantly bicycles, motorcycles and donkey carts in UWR). Geographical access to and utilization of midwifery services particularly focused antenatal, skilled assistance delivery and post-delivery follow-up care to prevent maternal and neonatal deaths due to lack of midwives at the CHPS zones (the nucleus/hub of Ghana's health system) is grossly limited (Adua et al 2017). Community-based health planning and services (CHPS) zones are located predominantly in the rural and deprived communities but also in needy urban communities of each electoral zone.

**Research Design**

Life course health care service provision is heavily labour-dependent; and health outcomes labour-sensitive (Chilver 2014; Castillo-Laborde 2011). For example, maternal, newborn and child mortalities respond best to the presence of skilled health personnel (JLI 2004; Russ et al

2014; Gwatkin 2017). Life course health development approach to understanding, measuring and reducing MCH outcome inequalities also emphasizes the interplay of multiple determinants and need for proven long-term MCH interventions and resources. These should enhance early years' life chances and child health development and impact life course health development at later stages in life to help reduce the inequalities (Steinbach 2016; Russ et al 2014). Health inequality as a complex phenomenon therefore requires a research design appropriate and adequate for addressing the specific research questions and setting (Schoonenboom and Burke 2017).

**Mixed methods- Rationale**

Social science enquiry into the complex phenomenon of inequities in MCH services and resources, and inequalities in outcomes requires a combination of research methods appropriate to the research questions, that is, mixed methods.

Mixed methods approach lends itself to innovative ways of combining quantitative and qualitative methodology, research methods and data as appropriate to the research question (s (Schoonenboom and Burke, 2017)). Webb et al (1966) postulated the use of multiple (triangulated) methods as ways of enhancing quantitative data with qualitative techniques that ensure 'checks on the accuracy, content, validity and relevance (meaning) to the respondents of the quantitative data that have been collected' (Bowling 2009 p.142).

Thus, the Ghana case of *why* and *how* increased geographical presence of skilled HRH in the regions in the north for equitable access to quality MNCH and other life-course population health care can impact more on its MNCH inequalities is the intrinsic motivation and focus of this study. LCHD research evidence links adolescent and adult health and social position to equitable access to a continuum of appropriate life course health care services and resources at each stage of life (Russ et al 2014, Steinbach 2016). These range from reproductive health

through maternity and early life chances to adolescent and adult health care and life expectancy (and Steinbach 2016; Russ et al 2014 and PHE 2014). For example, family planning service uptake can adequately prepare mother for healthy conception and reduced maternal and newborn mortalities (Gwatkin 2017; Marie Stopes 2016; JLI 2004 and Bunker et al 1995). Appropriate skilled antenatal, delivery, perinatal and child health care uptake have also been associated with healthy mother and child birth outcomes (Russ et al 2014). For example, mother-to-embryo/foetus transmission of healthy cognitive genes through the (healthy) placenta and breast milk resulting in healthy foetal/child development and good bonding/parenting (Russ et al 2014). Foetus/child chances of interacting with a favourable social environment are thus enhanced and, in turn linked with its cognitive and general health development; future educational achievement, social position and life expectancy (Russ et al 2014; PHE 2014; Steinbach 2016). This case study's research questions entail gathering both qualitative and quantitative data. The research design therefore combines quantitative and qualitative methods, data, techniques and tools in order to generate accurate, valid and relevant evidence for informed policy recommendations and further action (Schoonenboom and Burke 2017).

The practical issues of policy implementation practices in the Ghanaian setting are fundamentally behavioral and attitudinal practices and beliefs of the various policy actors. Their behaviors, attitudes and beliefs are the outcome of their individual understanding or interpretation of what the policy means to their own individual socio-economic motives/perspectives in relation to others (Kingdon 2011, 2015). They are more likely to lend their commitment and support to policy implementation where they are properly involved and their interest reflects in the policy interventions and outcomes (Amstrong et al 2006; Kingdon 2011, 2015). In other words, social phenomena like human behaviour, attitudes, beliefs and

practices in organizations and larger society that constantly respond to rapidly changing competitive external environment for survival and success are, to a large extent, socially constructed.

Discovering social realities behind HRH policy implementation challenges involves unveiling the hidden meaning behind individual and group actions which are the effects of their cumulative experiences and interpretations of the social phenomenon. According to Stahl (2003 p.2880) 'meaning is constructed in communication and discourse and individual and collective realities correspond because of shared use of narratives.'

**Convergent design**

To effectively address the four research questions in this study, both quantitative and qualitative data are required. The study thus integrated quantitative and qualitative methods synergistically using the convergent and triangulation approaches (Olsen 2004; Onwuegbuzie & Leech 2007; Schoonenboom and Burke 2017; Green et al 1989). Convergent mixed methods designs are a type of concurrent mixed methods research design. In this design, qualitative and quantitative data are gathered at the same time, but separately from one another, analyzed separately, then the results are compared.
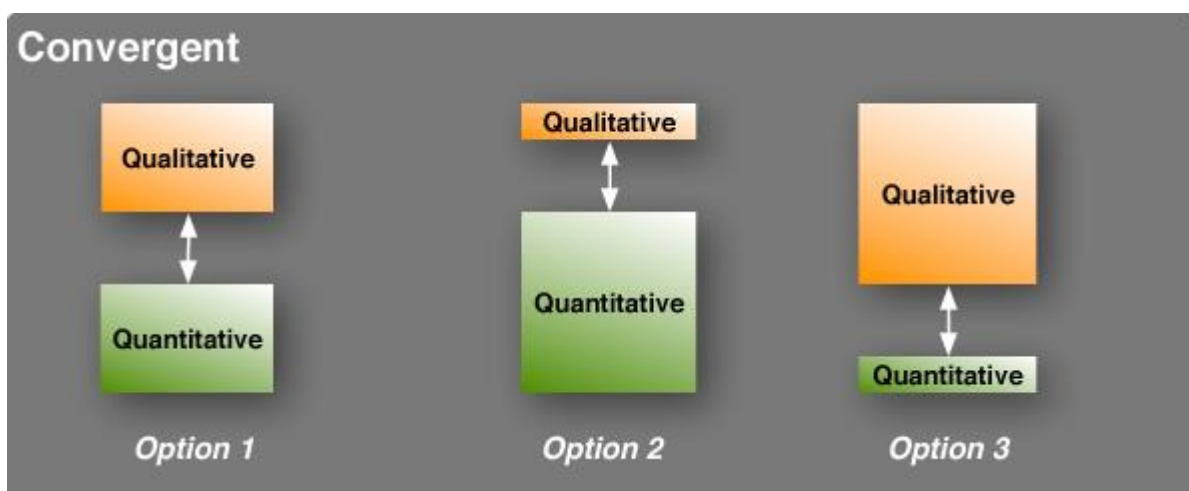


**Figure 4.1: Models of Convergent Mixed Methods Designs**

Option 3 design model best describes this study's design. The expanded design is presented below

QUALITATIVE Arms: Open-ended qualitative

guide

- In-depth interviews: politicians, doctors, district
  Directors (health & local
  government etc.)
- Focus Groups:  health professionals

  health clients

+

Quantitative Arms:

- Survey (health clients): semi-
  structured questionnaire
- Secondary data: country
  survey& routine data
- Literature

As a *concurrent design*, both components were executed (almost) simultaneously with the QUALITATIVE as primary and the quantitative as secondary or supplementary (Schoonenboom and Burke 2017).

The focus of the research questions is also more qualitative than quantitative. This means a

qualitative-quantitative type of convergent mixed method design is applied - primarily a

qualitative study that uses quantitative data to supplement or validate the qualitative findings

The goal here is to triangulate the findings from the two forms of data. Triangulation of the

two sets of findings serves to validate both the qualitative and quantitative findings (Bryman

2006; Green et al 1989, Schoonenboom and Burke 2017). According to Schoonenboom and

Burke (2017), the overall goal of mixed methods is to expand and strengthen a study's

conclusions; optimize knowledge and validity.

The study chose the research question-driven quantitative survey approach integrating some relevant qualitative themes or sub-themes (Olsen 2004). Integrating the different research methods right from the conceptualization and design of the study minimized the potential of divergent research findings from the two approaches to the same research topic or research questions (Moffatt et al 2006; Olsen 2004).

Thus, relevant quantitative data sources and tools (primary and secondary survey and administrative data) and qualitative data of written narrative accounts of IDI and FGD were integrated (Fetters et al 2013). According to Fetters et al (2013) integration of methods is achieved through four approaches. Fist is connecting: one database links to the other through sampling. In this study, a sub-sample of household survey respondents in each study district in the UWR, AR and GAR held a follow-up focus group. Second is building databases: one database informs the data collection approach of the other. In this study, the four interconnected research questions which are qualitative in focus informed the form and content of the household survey tool applied. Third is merging, whereby the two databases are brought together for analyses. Findings from the two forms of data were analysed, interpreted and reported together to arrive at the study conclusions and recommendations. Fourth is embedding whereby data collection and analysis link at various points.

The study chose the research question-driven quantitative survey approach integrating some relevant qualitative themes or sub-themes (Olsen 2004). Integrating the different research methods right from the conceptualization and design of the study minimized the potential of divergent research findings from the two approaches to the same research topic or research questions (Moffatt et al. 2006; Olsen 2004).

The survey questionnaires development was accordingly informed appropriately by the relevant qualitative themes or sub-themes and questions that could have been omitted if the

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tools had been developed separately. According to Bowling (2009), qualitative techniques are essential in the initial design of survey questionnaires and determination of measurement scales. In addition, the instrument for the follow-up focus group discussion by the community members/user clients (policy beneficiaries) was an adaptation of part of the survey questionnaire and the health professionals' focus group tool.

The 'convergent' design, more than triangulation which is a subsidiary technique of data integration, runs qualitative and quantitative methods alongside one another to complement one another as well as to check or validate one another (Schoonenboom and Burke 2017; Fetters et al 2013; Bryman 2006).

**Justification**

Quantitative and qualitative research strategies belong to two apparently parallel research traditions namely positivism and social construction and other non-positivist approaches respectively. The convergent design produces a rich understanding and account not only of quantifiable differences, for example, in health status and access to care, but also experiential data from IDIs and FGDs. This is achieved through complementing the respective data collection tools, data sources and analysis techniques. If the former suggests there are measures needed to even up access to health care provision, the latter often help policy makers understand in a nuanced way what sorts of provision (and access) would make sense in particular settings (Schoonenboom and Burke 2017).

Quantitative Data were thus collected on socio-demographic, economic, health service availability, accessibility and utilization, health seeking behavior and outcomes of sampled household respondents using a survey questionnaire. On the other hand, policy makers and medical staff (very busy individuals); and other health and related professionals and householders (clients) provided the qualitative data using IDIs and separate FGDs

respectively. Two qualitative guides were used for the IDIs and FGDs. One was applied to both IDI and professionals' FGD whilst the other was tailor-made to suit the client FGD as lay participants.

The aim of the adaptation of the quantitative and qualitative tools was to suit user clients' own lay context of understanding health and what produces health; their recognition of differences in their (individual, household and community) health over a period and as compared with others; the types of public service workers and services available and utilized and how they associate these with the health differences (improved or not improved) they experienced. It also suited the purpose of the study and information requirement of the topic (Eliot and Associates 2005, 2010).

The strategy thus resulted in the open-ended user-client focus group discussions, among the other qualitative methods, confirming and elaborating on patterns and themes of health differences and determinants of health including health care access identified from the quantitative survey regarding the two geographical areas (McEvoy and Richards (2006); Eliot & Associates 2005, 2010). Tables 4.3, 4.4 and 4.5 below provide the thematic summaries of these data collection tools. The approach allows flexibility in the integration, interpretation and triangulation of the two or more data sets with each one serving as reciprocal check on the other (Tashakkori and Teddlie 2010). The research processes are thus more rigorous, robust and focused and therefore lend themselves to achieving valid and relevant evidence.

The instruments collected narrative data on health and health inequalities; respondents' experiences on health services availability/utilization, health status improvement, factors they consider explain the health inequalities and, above all, the relative contribution of HRH policy and other factors. Finally, Ghana's HRH policies were evaluated as either successful or failure and the reasons for success or failure; and what HRH policy interventions and

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implementation conditions could significantly impact maternal, child and general health inequalities between the UWR and the AR and GAR.

The combined design enabled the study to provide contextual understanding coupled with either generalizable, externally valid findings or broad relationships among variables uncovered through the survey done (Bryman 2006; Schoonenboom and Burke 2017). Second, the study participants are diverse in background and potentially can express diverse views. Diversity of views could arise, iteratively connecting local idiographic knowledge (especially from the health client group) with national nomothetic knowledge. Also, learning from different perspectives on the teams, in the field and literature; achieving multiple participation, social justice and action; and determining what works for whom and the relevance or importance of context (Bryman 2006). Bryman (2006) describes diversity of views as

> '…includes two slightly different rationales – namely, combining researchers' and participants' perspectives through quantitative and qualitative research respectively, and uncovering relationships between variables through quantitative research while also revealing meanings among research participants through qualitative research (p. 106).

Further, LCHD approach to MCH and inequality reduction, the theoretical framework of the study, is multi-sectorial and multi-faceted and therefore justifies a design that achieves *multiple validities legitimization* (Johnson and Christensen 2017; Onwuegbuzie and Johnson 2006),

For full effect of convergence of the two seemingly parallel study methods, a GEHIP survey tool on RMNCH interventions was adapted to a Semi-structured tool. This was done with the inclusion of a few relevant themes from the householders' qualitative guide. The technique

allowed respondents to select as many options as applied to or described their responses to survey questions on health service utilization and health behavior/experiences, among others.

Both qualitative and quantitative approaches and researchers base validity of study results on the rigorousness of the data collection and analysis procedures or processes and drawing of inferences from the data sets gathered (Maxwell and Mittapalli 2006). Maxwell and Mittapalli (2006) and other critical realists differ though on research design (focus on procedures) being a basis for validity of study results; arguing that validity can be more or less depending on different study contexts or circumstances under which a method was employed. They however also believe in validity as a consequence of inferences drawn from the data sets. Multiple focus groups and in-depth interviews employed in this study focused on understanding, rather than mere inference, (Eliot & Associates 2005, 2010) health inequalities in participants' real social life contexts by way of the rich, in-depth and multiple insights they provide to the inequality trends, patterns and explanations for related individual and social actions.

The generalizability and transferability of the research findings are also enhanced through sample representativeness of, for instance, the quantitative method; and the very rich information gathered from the deeper insights into the phenomenon of the qualitative study participants' multiple perspectives and real-life stories (Baxter and Jack 2008).

The Case study method has been critiqued for its time and resource consuming nature. For example, the high interaction between the researcher and individual participants on one-on-one basis, through open-ended in-depth interviews; and individuals in groups, through focus group discussion is often time demanding (Staveteig 2016). The high value placed on the qualitative data gathered in the effective and close to accurate explanation, description and

interpretation of the phenomenon in its real-life context (Maxwell 2013; Guetterman 2015), however, warrants adequate time investment. It allows, arguably, participants the guided time and space to freely express their lived experiences, considered views and understanding of the research questions and help unravel the hidden meanings to the social phenomenon being studied. Second, and on account of the time factor, case study deals with limited samples, relative to large samples in quantitative studies like surveys, which findings are rarely generalizable or replicable at regional and national levels (Staveteig 2016) or in other research settings. The argument is however tenable in clinical case study settings which tend to deal with the individual as a single clinical case. Contemporary case studies in health and social sciences are designed to answer population-based public health research questions including sampling techniques leading to findings that are generalizable and replicable.

The methodological approach of the study thus sought to effectively diagnose what policy investment and program intervention options might more effectively even up health care access and reduce inequality particularly in maternal and child health between the worst-off UWR and the AR and GAR.

Against this background, this study set out to answer the following specific guiding research questions;

1. What factors account for the health outcomes inequality between the Upper West, Ashanti and Greater Accra regions?

2. Specifically, how do income, education and occupation factors contribute to the health inequality gap in maternal and child health care?

3. OR how does Ghana's human resource policy contribute to the health inequality gap in maternal and child health care?

4. What Human resource policy implementation conditions and interventions bridge the inequality gap in maternal and child health care?

**Methods**

The strategy involved two arms of study to operationalize the four interconnected research questions. The first arm involved sampled 1,500 household respondents in a survey in two districts each in the UWR, AR and GAR between the month of October and November. A sub-sample then engaged in follow-up FGDs in a total of twelve communities from the six districts of the three study regions. The FGDs were to help provide contextual insights into respondents' survey responses and inform appropriate policy interventions on their unmet MNCH needs in particular (Staveteig 2016).

The second arm comprised IDIs and FGDs of policy-makers or legislators and health professionals respectively. These groups have rich backgrounds and experiences in Ghana's policy analysis and implementation processes and outcomes to also provide rich insights into the determinants of Ghana's health inequalities, particularly MNCH, between the UWR, AR and GAR. On this basis, and discussions in the light of available national secondary data from different official sources, they offered informed suggested policy interventions that could help reduce the inequality gap.

The quantitative tools, mainly the household survey questionnaire and official national policy documents , reports and secondary data generally helped to measure the regional variations in the numbers and trends (Creswell 2014) in maternal and newborn health outcomes (proxy measures of health outcomes) between the UWR region in the north and the AR and GAR in the south of Ghana; the study participants' access to quality public health care services and their demographic and socio-economic profiles; and indications of the relative contribution of skilled human resources for health , as proxy for health care access, and the other social

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determinants of health (using participants' education, income/wealth and occupation as proximal measures). Thus, the quantitative tools and related analysis techniques tested the study hypothesis of whether narrowing the life-course public health care geographical access inequity gap separating the two geographical areas has a corresponding positive effect on narrowing the health outcome inequality gap more than the relative effects of the other determinants of health?

The Ghana Statistical Service's five yearly Ghana Demographic and Health Survey standard household survey questionnaires tool was adapted and adopted by the Ghana Essential Health Intervention Project (GEHIP) in the Upper East region for developing public health evidence for high impact community-based health service interventions like access to skilled provider services in family planning, antenatal care, delivery and post-delivery, immunizations, nutrition and health promotion. The tool was further adapted and adopted to suite the study goal, objectives, research questions and hypothesis.

Secondary national statistics from the various 5-yearly demographic and health Surveys (DHS), the Ghana Living Standards Surveys (GLSS), the Multiple Indicator Cluster Survey (MICS), Ghana Health Service's DHIMS 2 and Ministry of Health reports confirm that inequalities in health exist and persist in Ghana. Inequalities are also more visible between the three regions in the north, namely the UWR, Upper East and the Northern; and their seven southern counterparts including the AR and GAR described in chapter two. The health outcomes inequalities over the years between the two geographical areas are even more pronounced in MNCH as already indicated. Table 4.1 below depicts over 10-year regional early childhood mortality inequality trend data presented from the 2011 MICS report by the Ghana Statistical Service (GSS 2011).

**Table 4.1: Early Childhood Mortality Rates (per 1,000 live births) over 10-Year Period Preceding the Survey by Background Characteristic- Ghana, 2011**

| Characteristic | Neonatal Mortality rate | Post-Neonatal Mortality rate | Infant Mortality rate | Child Mortality rate | Under 5 Child Mortality rate |
|---|---|---|---|---|---|
| **Residence** | | | | | |
| Urban | 30 | 16 | 46 | 28 | 72 |
| Rural | 33 | 23 | 56 | 40 | 94 |
| **Region** | | | | | |
| Western | 27 | 24 | 50 | 17 | 67 |
| Central | 36 | 19 | 55 | 36 | 88 |
| **Greater Accra** | **20** | **17** | **37** | **19** | **56** |
| Volta | 47 | 21 | 68 | 22 | 89 |
| Eastern | 25 | 14 | 38 | 24 | 61 |
| **Ashanti** | **27** | **16** | **43** | **45** | **86** |
| Brong Ahafo | 44 | 21 | 66 | 41 | 104 |
| Northern | 39 | 27 | 66 | 63 | 124 |
| Upper East | 34 | 24 | 58 | 43 | 98 |
| **Upper West** | **41** | **26** | **67** | **44** | **108** |
| **Mother/Caretaker Education** | | | | | |
| None | 28 | 26 | 54 | 45 | 97 |
| Primary | 36 | 18 | 54 | 31 | 83 |
| Middle/JSS | 34 | 16 | 50 | 28 | 76 |
| Secondary + | 28 | 2 | 30 | 5 | 35 |
| **Wealth Index Quintiles** | | | | | |
| Poorest | 35 | 25 | 61 | 48 | 106 |
| Second | 28 | 22 | 50 | 37 | 85 |
| Middle | 35 | 19 | 54 | 30 | 83 |
| Fourth | 37 | 15 | 52 | 36 | 86 |
| Richest | 24 | 14 | 38 | 15 | 52 |
| **Total (Nat. Av.)** | **32** | **21** | **53** | **31** | **83** |

**Table 4.2:** Assistance during Delivery: % Distribution of Women age 15-49 who had live birth 2-years preceding the survey by person assisting at delivery and % of birth delivered by Caesarean Section (C-section) by Background Characteristic- Ghana, 2011

| Characteristic | Doctor | Nurse/ Midwife | Auxiliary Midwife | Any Skilled Person | %delivered by C-Section |
|---|---|---|---|---|---|
| **Residence** | | | | | |
| Urban | 21.8 | 65.6 | 0.9 | 88.2 | 17.3 |
| Rural | 6.5 | 45.9 | 1.5 | 53.9 | 7.0 |
| **Region** | | | | | |
| Western | 6.8 | 57.0 | 0.7 | 64.5 | 7.2 |
| Central | 7.9 | 54.4 | 1.2 | 63.4 | 11.3 |
| **Greater Accra** | **29.0** | **60.7** | **.0** | **89.7** | **23.2** |
| Volta | 9.2 | 54.5 | 0.7 | 64.4 | 14.7 |
| Eastern | 18.9 | 57.8 | 1.1 | 77.9 | 11.9 |
| **Ashanti** | **12.6** | **59.0** | **2.0** | **73.7** | **12.3** |
| Brong Ahafo | 8.5 | 52.5 | 2.7 | 63.7 | 6.1 |
| Northern | 4.8 | 31.7 | 0.7 | 37.3 | 3.4 |
| Upper East | 7.8 | 58.7 | 0.5 | 67.0 | 4.1 |
| **Upper West** | **7.4** | **48.5** | **4.5** | **60.4** | **4.4** |
| **Education** | | | | | |
| None | 4.7 | 38.2 | 1.1 | 44.0 | 3.8 |
| Primary | 9.7 | 55.4 | 1.0 | 66.2 | 8.7 |
| Middle/JSS | 13.3 | 64.5 | 1.7 | 79.4 | 12.4 |
| Secondary + | 35.2 | 59.6 | 0.5 | 95.3 | 29.2 |
| **Wealth Index Quintiles** | | | | | |
| Poorest | 3.7 | 33.6 | 1.4 | 38.6 | 4.4 |
| Second | 5.6 | 50.6 | 1.0 | 57.3 | 6.9 |
| Middle | 11.6 | 58.0 | 1.0 | 70.6 | 9.8 |
| Fourth | 15.3 | 69.5 | 1.1 | 85.9 | 11.6 |
| Richest | 32.0 | 64.1 | 1.5 | 97.6 | 26.3 |
| **Total (Nat. Av.)** | **13.0** | **54.2** | **1.2** | **68.4** | **11.4** |

**Source: MICS (2011) of Ghana Statistical Service, Accra**

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Table 4.1 shows that the UWR is worst-off in all the childhood mortality indicators compared with the AR and the GAR as well as the national averages. In relation to its relatively smallest population size, the UWR mortality trends are worrying.

Further, table 4.2 indicates that the UWR is worst-off in geographical access to skilled attendant deliveries compared to the AR and the GAR and the national averages. The trends are the same in skilled antenatal, skilled post-delivery care and other life-course critical MNCH interventions. Thus, both mother and child are at the highest risk of accumulating health-disadvantage including preventable pre-mature death, disability, low socio-economic status, and short life expectancy.

On the basis of Ghana's context of pronounced MNCH outcomes inequality trends amidst gross geographical skilled HRH inequities, but free maternity services and other pro-poor financial interventions, the three study regions were randomly sampled from the three ecological zones. Thus, the UWR, the AR and GAR from the savanna north, middle forest south and Coastal belt south respectively were selected to reflect a national picture of regional health deprivation or endowment across the country.

In each study region then, two study districts were purposively selected, one considered most deprived and the other most endowed applying the region's local deprivation/endowment criteria. The twelve study communities were similarly purposively selected, that is, two per each of the six study districts with one being relatively most deprived and the other relatively endowed.

Households and their respondents were randomly selected across each community and using the participant eligibility criteria (tables 4.7 and 4.8 below) respectively. The two extreme population groups were thus appropriately represented in the study and therefore nationally representative. The rationale for such stratification of the districts in each region was to

ensure equal opportunity of participation for participants from the different socio-economic and health backgrounds in each study region. The strategy thus also ensured elimination of sampling bias while promoting sample representativeness and validity of study results (Yin 2003).

Both primary and secondary data were used in this study. The Primary data were to provide specific health care access and outcomes, socio-economic and demographic data on the household respondents of the study communities to enable statistical testing of the study hypothesis and help answer the research questions.

The qualitative instrument is an open-ended question in-depth interview guide designed around sub themes that seek to answer the four main interrelated research questions. The instrument focuses on eliciting from respondents HRH policies and implementation practices that impede and those that support reduction in health inequality; how they rate HRH (or health care access), relative to other determinants of health, in contributing to reduction in maternal and newborn health inequalities between the north (UWR) and south (AR and GAR) of Ghana. In-depth interviews with key policy makers and implementers, pressure groups at national, regional and district levels; and separate focus group discussions involving health professionals and community members across the three ecological zones of Ghana were the methods applied in the qualitative multiple case studies conducted.

**Data Collection Method**

An open-ended question interview guide on themes and sub-themes linked to the research questions and hypothesis was initially developed and used to inform the design of the survey questionnaire.

The primary instrument, as indicated above, provided specific primary data that enabled comparison of the relative effect (s) of health care access with that of education, income and occupation on maternal and neonatal health outcome inequalities between the UWR and the AR and GAR; and also generated informed amenable solutions, supported with the available secondary data.

Summaries of thematic questions in the survey and the interview guides are provided in tables 4.3, 4.4 and 4.5 respectively below.

**Table 4.3: Summary of key themes for Survey Questionnaire**

| No. | Questionnaire theme | Respondent |
|-----|---------------------|------------|
| 1 | Demographic characteristics of respondent households | All |
| 2 | Socio-economic characteristics of respondent households | All |
| 3 | Information on deaths in respondent households within the past ten years | All |
| 4 | Reproductive health outcomes of female respondents: neonatal deaths, miscarriage, still births, maternal health, neonatal health | Females |
| 5 | Availability, accessibility and utilization of quality reproductive care Services: contraception, antenatal, delivery and post-delivery care | Females |
| 6 | Health Seeking behavior of respondents and their households including reasons for use or non-use of services | Females |

**Table 4.4: Summary of key themes for FGD with Follow-up community members**

| No. | Discussion Theme | Respondent |
|-----|------------------|------------|
| 1 | Perceived determinants of good health | All |
| 2 | Perceived household and community health situation: plus comparison | All |
| 3 | Perspectives: underlying reasons for differences in health experiences | All |
| 4 | HRH contribution to good health: availability, quality & gaps | All |
| 5 | Role of respondent households & communities in owning their health | All |
| 6 | Perspectives: health improvement in past decade-self, pregnant women and newborns | All |
| 7 | Perceived gaps in health needs and health workers in own community | All |

**Table 4.5: Summary of key themes for In-depth interviews and Health Professionals' FGD**

| No. | In-depth Interview & Focus Group Discussion Themes | Respondent |
|-----|---------------------------------------------------|------------|
| 1 | Determinants of the health outcome inequalities | All |
| 2 | Participants' own understanding of health inequality | All |
| 3 | Perceptions and ratings of the health inequality gap | All |
| 4 | Perceived underlying reasons for the health inequality gap | All |
| 5 | Ratings of the relative contributions of the underlying reasons | All |
| 6 | Human resource policies and practices promoting or negating impact | All |
| 7 | High impact human resource policy interventions and pre-conditions | All |

Data collection involved travelling by the researcher across the entire country starting from the Greater Accra region through Ashanti to the Upper West region to collect the qualitative data and also supervise the trained Research Assistants. In addition, the researcher collected relevant secondary data (country reports etc.) The RAs however travelled across their respective two study districts to collect the primary survey data.

**Sampling**

The second stage sampling involved calculation of regional and district study samples based on their 2010 national population census figures. With financial, person-time (at least two Assistants per region spending 8-hours daily over one data-collection month) and sample representativeness considerations underpinning sample size, a 90% power was considered with a 5% confidence interval. On the basis of regional HRH inequity trends, we assumed a human resource for health policy and practice impact on health outcomes in both endowed and deprived or urban and rural communities to be 50% (Dean et al 2011).Therefore, with a DF of 4.5 and a total study districts' population of 974,669, the required sample of 1220 was obtained using the formula: $n = [DEFF * Np(1-p)]/[(d2/Z21 - \alpha/2 * (N-1) + p * (1-p)]$ where **n** is the sample size needed. **N** is the pop size, **p** is the proportion of respondents suggesting an impact, **DEFF** the design effect (DF), alpha is the level of significance of the

test, **Z** the normal score, **d** is the width of the **CI** or expected precision, in this case 5%. With an anticipated non-response rate of 20%, about 1500 household respondent sample was needed. Therefore, applying a population weighted average on the sample size to the three study regions which are not homogeneous in the socio-economic structure and other factors we obtained the following in table 4.6:

**Table 4.6: Sampled districts and sample sizes-households**

| Region/district | District population | Sampled household respondents |
|---|---|---|
| Nadowli (Upper West) | 98,009 | 151 |
| Jirapa (Upper West) | 91,793 | 141 |
| Asante-Akim Central (Ashanti) | 140,694 | 217 |
| Amansie Central (Ashanti) | 90,741 | 140 |
| Tema Metropolis (Greater Accra) | 422,637 | 650 |
| Ada East (Greater Accra) | 130,795 | 201 |
| **Total** | **974,669** | **1500** |

**Participant selection**

**Survey**

Survey RAs in each district mapped out households in the two study communities. The process was largely facilitated by the existing enumerated areas of the Ghana Statistical Service's 2010 Population and housing census exercise; moreover, the RAs were usually persons familiar with the terrain; for example, in the Ada East district, two of the assistants were Community Development Officers from the District Assembly; others also had experience from assisting in similar previous exercises including the national immunization days (NIDs) exercises. Sampling of respondent households was done evenly across the community. Survey respondents, both male and female, were then recruited using the inclusion-exclusion criteria specified in table 4.8 below. From this group was also selected

those who agreed to participate in the follow-up FGD using the inclusion-exclusion criteria. Guetterman (2015) in his study of qualitative sampling practices in health sciences and educational qualitative research found that some studies drew their qualitative samples from their large quantitative random samples. Survey questionnaires data were collected over a period of one month.

**In-depth interviews & Focus Group participants**

Policy-makers, policy implementers and leadership of pressure groups and doctors were purposefully selected and personally contacted by the researcher with the introductory letter and invitation to participate in the in-depth interviews. These are very busy public officials (including the executives and legislators) and therefore not available for FGDs. Interviews were by appointments concluded with the consenting interviewees and conducted either on a later date or same day but only at their instance.

The health professionals (midwives, nurses, nutrition officers etc.), health-related professions of other sectors including local government and the regulatory bodies were also purposively selected for the FGDs. Discussion of complex social science topics such as health inequality which is multi-disciplinary in nature requires careful constitution of participants with subject knowledge or expertise and interest to create a collegial and conducive environment for high interactive and insightful discussion (Barbour 2001; Elliot & Associates 2010; 2005). Patton (2015) explained that the basis of qualitative case study or purposive sampling is the selection of those cases with rich information pertaining to the phenomenon being studied. Emmel (2013) also noted that the researcher employing the purposive sampling strategy is reflexive making decisions that are responsive to empirical findings and theoretical developments evolving during the study.

The rationale and focus of the qualitative sampling strategy were to generate rich information that help to describe and explain how reduction in health inequality can be achieved between the two geographical areas in this study, rather than outright generalizability or opinion representativeness (Maxwell 2013). Creswell (2013), Morse & Field (1995) and Onwuegbuzie & Leech (2007) also noted participant appropriateness and adequacy of qualitative sampling as key considerations if the aim of in-depth and rich insight into the phenomenon studied would be achieved from the participants' qualitative data. Creswell (2013) for example, specified three considerations in this respect, namely the purposeful sampling appropriateness and adequacy relating to participant or site selection; sampling strategy; and sample size. Methodologists like Guest et al (2006) and Onwuegbuzie & Leech (2007) suggested the use of data saturation, that is the point in data collection or analysis whereby new information ceases to emerge with respect to the codes and themes of analysis as a measure of sample adequacy. O'reilley and Parker (2012) however questioned the relevance and transparency of theoretical saturation beyond grounded theory, arguing for such methodologists to be transparent and explain how data saturation is achieved.

Respondents in this study play active roles in health policy formulation, implementation, public health service and health related care delivery; and health care utilization. Interviewees and focus groups also share long standing concerns and lived experiences about health care inequity, health differences within and across geographical areas and societies in Ghana. The 11 in-depth interviewees, 8 participants each of the six (6) professional focus groups across the three ecological zones of the country, yielded a total purposive sample size of 59 (policy-makers and professionals), were selected on the basis of their exposure to the phenomenon by virtue of the nature of their job or background characteristics including interest in group discussion of issues of common social and individual interest.

The researcher's 28-year practitioner experience as a Senior Health Manager also informed participant selection process. In particular, the interviewees are well known legislators some of whom have also served as cabinet ministers for the health sector and local government. Others are Human Resource Directors, District Directors of Health Services, Trade Union Leadership and local government professionals like planning officers. They have long standing experience and record in health policy analysis and practice and the history of the geographical variations in health, health care access and other socio-economic sectors of Ghana.

For the 8-member Health Professionals and health-related professionals' focus groups, participant inclusion-exclusion criteria were further narrowed down to those professionals directly linked with reproductive and child health and related service provision. For example, midwives, nurses, nutrition officers, social welfare officers, community development officers among others were purposefully selected over others. The rationale is that geographical health inequality is more pronounced in maternal and child health outcomes in Ghana (Zere et al 2012) and therefore the proxy health outcome measures employed in this study. District Health Directorates and District Assemblies (Local Government) were then left to select actual participants based on the general and specific inclusion criteria.

Client focus group participants (sub-sample of survey household respondents) were also purposively selected, with the help of health professionals, from the list of survey respondents who had earlier agreed to participate. They identified the best known suitable individuals through comparing the person details on the list with the respective community health register. In all, a total of 48 client FGD participants from the six FGDs (8participants in each) across the three ecological zones were selected. As indicated above the interview tool for the client focus group was an adaptation from the professionals' tool to suit their lay background by simplifying the language or reframing questions without taking away the

relevant key thematic discussion topics. Glaser & Strauss (1967) cited in Bergold & Thomas (2012) suggested the inclusion of lay focus groups in the use of focus group discussions in qualitative case studies to ensure the flow of all perspectives into the interpretations during the data analysis process. Guetterman (2015) and Patton (2015) also explained that such stratified purposive sampling strategy is amenable to comparison and capture of variations in findings between the different fields of inquiry or settings in which the phenomenon is being studied. Both male and female who met the inclusion-exclusion criteria specified in table 4.7 and 4.8 below; and as per the demands of the research questions and the tools (Guetterman 2015) summarized in tables 4.3, 4.4 and 4.5 above, were eligible for the survey, in-depth interviews and FGDs.

However, only eligible females in respondent households responded to the reproductive health (maternal and newborn care and outcomes) sections of the quantitative survey tool. The rationale is that these intensely and widely experience or are exposed more directly to reproductive health care and the maternal, newborn and child health outcomes on life-course basis. They are therefore better placed to provide more insightful, rich and accurate information relating to their respective household than the male counterparts. Secondly, the information is about the same household and need not be duplicated by the male household counterpart(s). Thirdly, unnecessary demand of male respondents' and overall research time was avoided.

**Table 4.7: Inclusion-Exclusion Criteria for study participants- Policy-makers and Health Professionals**

| Criteria/Respondent | Policy-makers | Professionals | Results |
|---|---|---|---|
| Age (19-yrs & above) | √ | √ | satisfied |
| Consent- endorsed | √ | √ | satisfied |
| Language | English | English | satisfied |
| Questionnaire | Not applicable | Not applicable | satisfied |
| Focus Group (Prof.) | Not applicable | √ | satisfied |
| Focus Group (Clients) | Not applicable | Not applicable | satisfied |
| In-depth Interviews | √ | Not applicable | satisfied |

**Table 4.8: Inclusion-Exclusion Criteria for study participants- Clients**

| Criteria/Respondent | Policy beneficiary | Results |
|---|---|---|
| Age (19-yrs & above) | √ | Satisfied |
| Consent- endorsed | √ | Satisfied |
| Language | English or local | Satisfied |
| Questionnaire | √ | Satisfied |
| Focus Group (Prof.) | Not applicable | Satisfied |
| Focus Group (Clients) | √ | Satisfied |
| In-depth Interviews | Not applicable | Satisfied |

## Reliability and Validity Test

The research instruments were tested for validity of content and reliability of data through a pilot study conducted in the Upper east region of Ghana; training of the RAs in each study district and meeting approved ethical standards/terms.

## Pilot study

According to Fraenkel and Wallen (2009), a pilot study is a trial run of the research conducted on a small scale in order to ensure the validity and reliability of the data collection

tool. For validity, the questionnaire and interview guide were vetted by the research supervisors to ensure that their contents were relevant and adequate toward the achievement of the set research objectives.

In addition, to establish the reliability of the questionnaire, data were collected from 11 respondents from the Upper East Region of Ghana. The Cronbach alpha reliability test was performed in the Statistical Package for Social Services (SPSS) and the overall reliability coefficient obtained for the questionnaire was 0.895 based on some 259 closed-ended items. This value was greater than the minimum cut-off point of 0.700; indicating that the questionnaire had an 'adequate' internal consistency hence reliable, according to Cohen (cited in Leech, Barrett & Morgan 2005). This means that the interview guide and the questionnaire needed no further revision or modification for the main data collection. The results are in the tables 4.9a and 4.9b below;

**Table 4.9 a: Items Classification Table**

| Cases | N | % |
|---|---|---|
| Valid | 10 | 90.9 |
| Excluded | 1 | 9.1 |
| **Total** | **11** | **100.0** |

**Table 4.9b: Cronbach's Alpha Reliability Coefficient**

| Cronbach's Alpha | No. of Items |
|---|---|
| 0.895 | 259 |

**Research assistant training**

Research assistants with considerable knowledge in the culture of the study communities, including the local language from each study district were recruited with the help of the

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District Health Directorates (DHDs). These included community development and social welfare officers, national service personnel from tertiary educational institutions and data officers. This facilitated community entry as well as eliminated language challenges in the effective administration of instruments. An example is establishing rapport and sustaining respondents' interest and responses to the questionnaire. Some of them had participated in similar research conducted by or in collaboration with Development Partners of the DHDs. Others have also participated in Ghana Demographic and Health Survey(s), National Immunization Days campaigns or their own academic project work at school. They therefore had some exposure or experience in dealing with the cultural and ethical implications of conducting a health care survey in these study communities

RAs were given one day training on the administration of the survey questionnaire and ethical issues. Training on survey questionnaire included using the correct local language version of certain words or phrases in order not to change the demand of the question. Ethical training particularly focused on techniques for handling sensitive questions and data such as a respondent's household mortality history. In addition to the RAs ethical training, health professional counselors contacted were readily available to counsel a participant who might still be affected by mortality or other sensitive question or data asked.

Training sessions ended with practical trial administration of questionnaire by each RA on peer-to-peer basis. This process was carefully monitored and only those who demonstrated good skills were shortlisted and duly contracted to undertake the exercise. In all, nine RAs were involved comprising two each in the UWR and AR and five in the GAR based on their respective survey sample sizes.

Thus, RAs were used for community entry and administration of the 259-item household survey tool in the 12 study communities of the three study regions. In all, 1478 householders

responded to questionnaire administered by the RAs. This was done over one data collection month. RAs activities on the field were supervised by the Researcher who verified and received duly completed survey questionnaire from RAs for subsequent data entry and statistical analysis. Data entry and statistical analysis were also done using RAs knowledgeable and competent in the application of computerized statistical analysis techniques and tools. For example, the chi-square test and logistic regression analysis are some of the processes performed with the technical assistance of RAs. These RAs unlike their field counterparts are data analysts/officers of universities in Ghana. The researcher checked data entered for completeness with respect to the 1478 completed questionnaire prior to the quantitative analytics done in this study. All RAs were duly paid the agreed service fee. RAs were however not used in the qualitative data collection and analysis. These were solely done by the researcher himself.

**Ethical considerations**

The study purpose processes and participant rights including privacy, confidentiality, and decision to withdraw from interview at any point during the process, or not to answer a particular question (s) were duly explained to each prospective participant. This avoided adverse emotional effect on a participant who might be sensitive to certain questions. For instance, question (s) that reminds them about the loss of a dear one. Only participants who consented and signed the consent form were recruited for participation in the research. IDIs and FGDs were all conducted personally by the researcher himself at the appointed times. In addition, the researcher supervised the survey questionnaire administration by the trained research assistants (RAs). Particular attention was paid to identification of adverse events (if any) and how these were addressed in line with the study protocol.  All interviews and focus group discussions were digitally tape recorded with participants' informed prior consent. This

ensured that participants' narratives were recorded verbatim for accuracy of data (Baškarada 2014) alongside written observational notes on relevant group dynamics.

Confidentiality in the use of the audio tape recorder and of the entire research data gathered was guaranteed in three main ways. First, names of participants were withheld as part of the initial rapport process hence the voices were without identity for the third party. Second, the data gathered were transferred and saved in the researcher's computer under his secret code or password. Third, the researcher carefully monitored and avoided possible distraction in the use of the device throughout the discussion sessions. Participants' non-attentiveness to the presence of the device was signified by the free flow of individual narratives and the high interactive discussions that took place in the various focus groups.

 Observational notes were written at the end of a discussion session to avoid interruption of focus and process flow and likelihood of introduction of bias. Survey questionnaire responses were however manually recorded by the RAs as questionnaire were mainly coded, sometimes multiple choice and circling of applicable responses. Further, study participants were not identified by names likewise death (s) in households. Computerized filing system was created for and saved all research data gathered, both primary quantitative and qualitative data as well as the secondary data except sources without electronic versions. Files were duplicated by e-mailing to the researcher's mail box as safeguard against any eventuality relating to loss or system corruption. Such versions were similarly secured under the researcher's code or password.

The researcher interviewed respondents at their designated convenient workplace or community venue. Also, researcher refrained from interrupting respondents' narrations and rather encouraged them to freely express their views and feelings by signifying agreement, appreciation and commendation for views expressed. This largely helped respondents to feel

relaxed, confident in voicing their knowledge, experiences and views on the issues being researched.

Access to study regions was obtained through a letter of ethical approval from the Ministry of Health/ Ghana health Service Ethical Review Committee of the Research Directorate which also served as introductory letter to the respective Regional Directors of Health Services. Access to study districts and communities were similarly facilitated by introductory letters from the respective Regional and District Directors.

The Research Directorate of the Ministry of Health/ Ghana Health service also monitored and supervised the data collection processes in accordance with the approved study protocol. In all, 1478 household survey respondents; 11 in-depth interviews, 6 Professional focus groups and 6-client (policy beneficiary) or community focus group discussions were conducted between August and December 2014.

The study therefore observed ethical issues anticipated by the research design or protocol signified by response rates of 98.5% and 100% in the quantitative survey and qualitative interviews and FGDs respectively.  There was no withdrawal from the qualitative study except one focus group member on grounds of sudden ill-health in the course of the deliberations. The researcher had her promptly attended to by the nearest available prescriber (a Physician Assistant). There was also no sensitive data or question-related incident recorded. Indeed, FGD respondents called for more of such research to help improve their quality of life; some interviewees also viewed the research topic as a grossly under-researched area in Ghana and therefore commended the initiative. Their enthusiasm and contribution signify their satisfaction of being recognized, and support of the research.

**Administration of instruments**

Administration of the research tools was generally conducted within the average timeline anticipated by the study protocol for each of the interventions namely 45minutes, 30minutes and two hours for the survey, in-depth individual interviews and focus groups respectively. The pilot study lessons learnt, the RAs training and the guided IDIs and focus groups jointly explain how this was achieved. Participants in client and professionals focus groups were provided refreshment and token amount to signify appreciation and recognition for contribution made and time spent. All participants were duly appreciated and thanked for their role in the study at the end of their respective sessions with the research team.

**Data Analysis**

The goal, objectives and the research questions or theoretical propositions/hypotheses of the study determined the basis for the chosen data analysis approach and techniques used in this study to achieve validity, reliability and generalizability of the evidence (Yin 2009; Mason 2006). According to Mason (2006), combining research methods crucially requires that data analysis be logically and purposefully linked to the strategy and what the study aims to achieve. Mason outlined six strategies for achieving this and illustrated that logically designed mixed methods research provides breath or depth and rigor to the processes leading to knowing the 'real life' by adding the missing extension required of one method through appropriate application of the other. For example, the general picture of a research question predicted from rigorous statistically significant sampling and analysis processes can use the case study qualitative approach to achieve deeper meaning of the phenomenon.

**Qualitative Data: combined/constant comparison method**

According to Yin (2009 p.129), qualitative case study "data analysis consists of examining, categorizing, tabulating, testing or otherwise recombining evidence to draw empirically based conclusions." It is a process guided by a prior theory or the emerging theoretical concepts grounded in general theoretical concepts or literature (Gale et al 2013; Ives et al 2013; Baškarada 2014).

In this study, analysis of the qualitative data was done both during and after the data collection processes. For example, the researcher occasionally, where necessary, would summarise a participant's interpretation of an issue being discussed for their confirmation of otherwise. The approach was to ensure the resulting interview data yield construction of data that represents the mutual interpretation of the interviewer and the interviewee as the interview proceeds (Glaser 2002).

All the audio taped 11 in-depth interviews and 48 focus groups (24 each of community client and health professional) were manually transcribed verbatim by the researcher. The process involved repeated play back of the voice recordings of each respondent/participant. Transcripts and the field observation notes were read and examined a number of times to help understand the emerging patterns in the data before coding was done (Dalinjong et al 2017; Ives et al 2013). The principal researcher reviewed a number of the recordings comparing to their corresponding original transcribed data. All observed differences were then corrected before coding. This was to ensure accuracy and validity of the data collected (Gale et al 2013).

The qualitative data were analysed using set of codes organized into categories. This created a new structure for the data from the full original accounts given by participants (Gale et al

2013). It helped to summarize/reduce the data in a way that supports answering the research questions (Gale et al 2013).

The analytic process was a written investigation of themes/concepts reflecting on emerging issues in the data. A combined approach to analysis was adopted (Gale et al 2013; Ives et al 2013; Glaser 2002; Baškarada 2014). According to the authors, the combined or the constant comparison approach enables themes to be developed both inductively from the research participants' accounts (experiences and views) and deductively from existing literature. I critically examined, step by step, participant responses identifying and reflecting on divergent views/cases (if any) and recurring themes (Gale et al 2013).

First, researcher ensured uniformity in transcription style across the whole dataset. The central interest for analysis is on the content, rather than the structure of participants' responses hence long pauses, interruptions and nonverbal communication (such as laughter) were noted within the text (Ives et al 2013). The entire transcript was checked for errors by repeatedly listening back to the audio-recording and reading the transcripts simultaneously. The researcher thus reviewed a number of the recordings comparing to their corresponding original transcribed data (Ives et al 2013). All observed differences were then corrected before coding. This was to ensure accuracy and validity of the data collected.

Second, this approach also enabled familiarization with the interviews, and noting where participants expressed exceptionally strong or contrasting views to their colleagues (if any). The transcript was also supplemented with observational notes made during and immediately after the interview. For example, noting body language and instances where views were given after the recorder was switched off.

Thirdly, researcher underlined or highlighted interesting portions of text and described the content of such narrative with a label or code, for example, 'relative contribution of access to

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health inequality'. Each coded section was then carefully examined regarding why it had been interpreted as meaningful, what it told about participants' views on the particular thematic or sub-thematic aspect of the research questions (Ives et al 2013; Gale et al 2013). Researcher thus obtained a set of codes, each with a brief definition to form the initial analytical framework.

The rest of the entire transcription was then similarly analyzed noting any new codes not matching the existing set (Ives et al 2013; Gale et al 2013). The initial framework was expanded to include these new sets of codes. The expanded framework was then reviewed and revised by identifying and regrouping codes that are conceptually or thematically related and therefore should be together (Ives et al 2013; Gale et al 2013; Yin 2003).

This refining process of the analytical framework was repeated until no new codes were generated. The final framework was applied to systematically go through the entire transcript, highlighting each meaningful passage of text and selecting and attaching an appropriate code from the final analytical framework (Ives et al 2013; Gale et al 2013).

Once all the data had been coded using the analytical framework, the process summarized the data in a matrix for each theme using Microsoft Word. For each category, data from transcripts for each participant and code was then abstracted and summarized using verbatim words or quotes (Ives et al 2013; Gale et al 2013).

Finally, data were interpreted. Themes were generated from the data set by reviewing the matrix and making connections within and between participant and categories. This iterative reflexive process was influenced both by the research objectives and by new concepts generated inductively from the data. Interpretation however went beyond descriptions of individual cases to developing themes that provide possible explanations for what transpires

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within the data and answer the research questions/theoretical propositions (Ives et al 2013; Gale et al 2013).

Similarities and differences of the emerging common patterns in participants' interpretations of the issues discussed were re-categorized under appropriate thematic areas relating to the theoretical propositions. In other words, evidence from the multiple data sets compared was recombined logically to draw appropriate conclusions.

**Quantitative Data (survey)**

First, the survey data were quantitatively analysed into mainly categorical data along the thematic areas of the survey questionnaires using Statistical Package for Social Service (SPSS) techniques and tools. The outputs were numbers or frequencies and percentages of the emerging dependent and independent variables of the hypothesis with respect to the three study regions. For example, numerical data on trends in household mortalities in the past ten years; neonatal mortalities, still births and miscarriages (dependent variables) in the study regions were obtained alongside independent variables such as access to skilled provider deliveries, skilled provider antenatal care, post-natal care and family planning, health education, household income, household educational status and household occupation, among others. A chi-square test was run on the geographical variations in these indicators or variables emerging from the initial descriptive frequencies run in order to test the study hypothesis for statistical significance or otherwise. The chi-square results in chapter 5 (table 5.2: annex) of the study suggest statistically significant health differences between the UWR, on one hand and the AR and GAR on the other. To determine if statistical correlation exists between the dependent variables like neonatal mortalities and the independent variables like health care access (skilled provider service utilization) and the other social determinants of health enumerated above; and the extent of the relative contribution of each selected

independent variable to the dependent variable occurrence, regression was run and the results presented in tables 5.3and 5.4 (annexes) in chapter five of this study.

A hierarchical binary logistic regression was employed to examine the influence of health care access (skilled provider service utilization) on incidence of neonatal deaths while controlling for the effect of background characteristics and access to information. Incidence in this case measured as whether one had ever recorded neonatal death or not. As a dichotomous outcome, it was coded as Bernoulli outcome (0 and 1), where 1 represented ever recorded neonatal death and 0, never recorded neonatal death. Hosmer, Lemeshow, and Sturdivant (2013) assert that logistic regression is the most appropriate tool for a dichotomous dependable variable and explanatory variables measured in varying levels. In all, three models were estimated; none of them had an Omnibus tests model coefficient probability value greater than 0.05 likewise none of the Hosmer and Lemeshow test probability values were less than 0.05. These suggest that each of the models is stable and properly fitted.

To provide further insights, the influence of health care access on frequency of neonatal deaths was also analysed using a hierarchical binomial negative regression. Again, background characteristics and access to information were considered as control variables. Negative binomial regression was considered suitable because of, first, the cross-sectional nature of the data; and second, the reasoning that frequency of neonatal deaths is a count variable (Cameron & Trivedi 2005). Count variables indicate 'how many times something has happened' (Long & Freese 2006: 349), and they take on nonnegative values' (Wooldridge 2010: 723). It is admitted that Poisson regression is the first estimation technique to be considered for fitting count data, but negative binomial regression was also deemed appropriate because the Pearson likelihood-ratio test showed that the mean and variance of the data are not equal implying over dispersion in relation to the Poisson

distribution. This outcome suggests that the data does not meet the conditional assumption of equal mean and variance required for Poisson models (Ajiferuke & Famoye 2015).

The analysis theories and techniques of hierarchical logistic regression of predictors of household's neonatal mortality; and hierarchical negative binomial regression on determinants of number of deaths (neonatal and miscarriages) used to predict the contribution of human resource for health policy and practice (health care access) to reduction in health inequality in Ghana are thus consistent with qualitative case study method. Cases from the sampled populations provided deeper insights into the why and how of this policy contribution to the health inequalities and the contextual real-life solutions through the in-depth interviews and focus groups discussions conducted on the related research questions (Wood et al 2004; Yin 2003, 2006; Staveteig 2016). Analysis of qualitative data was done during and after the data collection (Yin 2003); and the focus was on themes, patterns and concepts emerging from participants' interpretations of the issues discussed in relation to the research questions. In particular, convergent and divergent views (Olsen 2004) on the determinants of health, whether health differences really exist between the north and south of Ghana, the contribution of human resource policy and practice (health care access in terms of skilled provider service availability and utilization) to health inequality reduction relative to the other determinants of health inequality; and the contextual solutions to achieving effective health inequality reduction between the north and south of Ghana were identified and categorized.

The results of the chi-square test and the hierarchical logistic and hierarchical negative binomial regression analysis of the relationship or correlation between neonatal deaths and still births (as health outcomes-dependent variables) and access to public health care services (skilled public health care provider service) and the other social determinants are presented in chapter five. Results of the qualitative case studies, alongside the triangulation of the two

methods and evidence (Moffat et al 2006; Asthana and Halliday 2006; Olsen 2004) are presented in chapters five and six.

**Presentation of findings re convergence: Triangulation**

As argued in the first three chapters of the study, achieving reduction in health inequalities in Ghana, like other developing countries and globally, require more effective approaches to explore fully the relevant contextual explanations and solutions to the phenomenon. Such approaches, I argue in the ensuing chapters, are embedded in the triangulation of qualitative and quantitative methods and evidence. I further argue that increasing equal geographical access to quality and contextualized public health care services on a life-course scale plausibly contribute more to health inequality reduction than the other determinants of health.

In this study, the quantitative and qualitative methods were triangulated from the design stage through data collection to analysis and interpretation of findings or evidence as indicated in the preceding paragraphs. Quantitative and qualitative data sets were first analyzed separately using the computerized and manual analytical tools and techniques respectively also described above. There were no discrepancies found comparing the findings or evidence from the two data sets. In other words, both qualitative and quantitative results suggest that increasing equal geographical access to quality health care for the two geographical areas can contribute more to health inequality reduction than the other determinants of health. There was therefore no need for further exploration of the two data sets as in the case of discrepancies in findings between quantitative and qualitative results in a single mixed method study (Moffatt et al 2006).

This study's significance for national health policy is filling in a knowledge gap: maternal, child and other health inequality indicators separating the UWR and the AR and GAR could be more impacted with increased geographical access to and utilization of life- course public

health care and related services delivered by skilled HRH in UWR than education, income and occupation. Further, between 2012 and 2014, UWR instituted some local innovative HRH interventions to attract and retain medical staff, midwives and nurses in particular (GHS 2014). In 2014, UWR had increased its doctor population by 50% (GHS 2014; Ministry of Health-Ghana 2014). The region therefore also provides a good ground to test the study hypothesis and research question.

The various policy actors, interviewees and focus groups, in their narratives identified and rated the possible factors determining the health inequality gap; and also provided rich insights into how these factors operate to perpetrate or reduce health inequalities. Thus, the research questions also helped reveal some hidden insights into some responses of the quantitative survey respondents (Straveteig 2016) and offered more effective policy options that might help to effectively even health care access and reduce inequalities in health, particularly maternal and neonatal between the worst-off UWR in the north and the AR and GAR in the south.

In conclusion, the study method is a convergent design using quantitative and qualitative methods. Analysis aimed to produce a rich account of health status of populations in three (3) regions (sampled from north and south) where significant differences can be seen in social factors influencing health and also in the extent of health services provision. A focus on maternal and child health provides a site for enquiry in which access to health services is most likely to explain significant difference, and which is amenable to a relatively straight forward/implementable intervention to address such inequalities. Analysis brings together findings from the two strands of the study: the quantitative survey and qualitative data from IDIs and focus groups with both health service clients and health service providers and policy-makers. Logical study conclusions were then drawn, discussed with relevant literature

and appropriate policy recommendations made relating to possible ways to reduce the health inequality gap in MCH between UWR and the AR and GAR.

**Overview of participants**

Qualitative study participants are in three categories namely interviewees (in-depth interviews), focus group (professional) and focus group (client). Each participant in each study region was given a unique identifier. All interviewees were identified with 'R'. Each interviewee was then uniquely identified by 'R' plus their respective serial number in the order in which the eleven independent interviews were conducted. Thus, R1, R2, R3 etc. as given per the table below.

Two categories of focus groups were involved, namely the health professionals identified with the acronym 'FGP'; and the health client identified with 'FGC'. Each of the forty-eight participants in the health professional focus group, across the three study regions, was uniquely identified by 'FGP' plus respective serial number in the order in which they were recruited and their respective focus group discussions were conducted. Thus, FGP1, FGP2, up to FGP48. The same principle applied to the client focus group participants' unique identification system whereby this category was identified with 'FGC' followed by the individual's serial number. Thus, FGC1, FGC2, up to FGC48 as given in the table below.

**Table 4.10: Participants' Identifiers**

| Participant: Category/Region | GAR | AR | UWR |
|---|---|---|---|
| In-depth Interview (IDI) | R9;10 | R1; R2; R4; R5; R6 | R3; R7; R8; R11 |
| Focus Group (Professional) =48 | FGP1;FGP2;FGP3 FGP4;FGP5;FGP6 FGP7;FGP8;FGP9; FGP10;FGP11;FGP12; FGP13;FGP14;FGP15; FGP16 | FGP33;FGP34;FGP35 FGP36;FGP37;FGP38 FGP39;FGP40;FGP41; FGP42;FGP43;FGP44; FGP45;FGP46;FGP47; FGP48 | FGP17;FGP18;FGP19 FGP20;FGP21;FGP22 FGP23;FGP24;FGP25; FGP26;FGP27;FGP28; FGP29;FGP30;FGP31; FGP32 |
| Focus Group (Client) = 48 | FGC1;FGC2;FGC3 FGC4;FGC5;FGC6 FGC7;FGC8;FGC9; FGC10;FGC11;FGC12; FGC13;FGC14;FGC15; FGC16 | FGC33;FGC34;FGC35 FGC36;FGC37;FGC38 FGC39;FGC40;FGC41; FGC42;FGC43;FGC44; FGC45;FGC46;FGC47; FGC48 | FGC17;FGC18;FGC19 FGC20;FGC21;FGC22 FGC23;FGC24;FGC25; FGC26;FGC27;FGC28; FGC29;FGC30;FGC31; FGC32 |

Total = 107

# CHAPTER FIVE: RESULTS MATRIX OF DETERMINANTS OF HEALTH INEQUALITIES BETWEEN THE NORTH AND SOUTH OF GHANA

## Introduction

The main objective of the study was to assess the contribution of human resource for heath (HRH) policy to reduction in maternal and child health outcomes inequality between the UWR in the north and the AR and GAR in the south. Are maternal and child health care by skilled HRH equitably accessible, available and utilized equally in these study regions?

This chapter is the most substantial of the thesis, reporting the matrix of findings from both the qualitative and quantitative primary research undertaken. The two forms of findings are reported together (re convergence) by triangulation (Schoonenboom and Burke 2017; Green et al 1989; Straveteig 2016; Moffat et al 2006; Asthana and Halliday 2006; Olsen 2004). A summary of the results matrix is presented in table 5.1 below.

**Table 5.1: Results Matrix: relative contribution of underlying causal factors of MCH inequality: UWR vs. AR, GAR**

| Participant /Theme | Health care & resources | Food & Nutrition | Water & Sanitation | Economic status | Occupation | Educational status | Socio-cultural practices |
|---|---|---|---|---|---|---|---|
| R1 | **Rating:** 9/10 | | | | 1/10 | | |
| R2 | | | | 5/10 | | 5/10 | |
| R3 | 9/10 | | | | 1/10 | | |
| R4 | 7/10 | | | | 3/10 | | |
| R5 | 4/10 | | | | 6/10 | | |
| R6 | 6/10 | | | | 4/10 | | |
| R7 | 7/10 | | | | 3/10 | | |
| R8 | 2/10 | | | | 8/10 | | |
| R9 | 4/10 | | | | 6/10 | | |
| R10 | 8/10 | | | | 2/10 | | |
| R11 | 8/10 | | | | 2/10 | | |
| Overall Factor contribution rating | 6.4/10 | | | | 3.6/10 | | |
| | | | | | | | |
| FGP 1-8 | 6-7/10 | | | 7-9/10 | | 6-8/10 | |
| FGP 9-16 | 3-6/10 | | | 8/10 | | 2/10 | |
| FGP 17-24 | 6-8/10 | | | | | | |
| FGP 25-32 | 5/10 | 8/10 | | | | 5/10 | |
| FGP 33-40 | | | | 4/10 | | 2-6/10 | 3/10 |
| FGP 41-48 | | | | 6/10 | | 9/10 | 8-9/10 |
| Factor contribution to MMR & NMR | 6.5/10 | | | | 4.75/10 | | |
| | | | | | | | |
| FGC 1-8 | | | | | | | |
| FGC 9-16 | | | | | | | |
| FGC 17-24 | | | | | | | |
| FGC 25-32 | | | | | | | |
| FGC 33-40 | | | | | | | |
| FGC 41-48 | | | | | | | |
| | | | | | | | |
| **Chi-square** | Location: 498.796; p=0.00 DEL: 82.560; p=0.000 ANC: 133.214; p=0.000 PNC:198.967 p=0.000 | | 48.213 & 163.982; p=0.000 | **Income:** 109.901; p=0.000 **Wealth:** 194.159; p=0.000 | 206.952; p=0.000 | 58.277; p=0.000 | **Ethnicity:** 967.572; p=0.000 |
| **hierarchical logistic regression** | DEL: P>\|z\|= -2.82** ANC: P>\|z\|= 3.61** PNC: P>\|z\|=  -0.72 | | | Income: P>\|z\|= -0.72 Wealth: P>\|z\|= -0.43 | P>\|z\|= -1.45 | P>\|z\|= -0.83 | |
| **hierarchical negative binomial regression** | DEL: P>\|z\|=-1.96* ANC: P>\|z\|=-2.45** PNC: P>\|z\|=-2.72** | | | Income: P>\|z\|= -1.64 Wealth: P>\|z\|=3.12** | P>\|z\|= -3.00** | P>\|z\|= -3.83** | |

First, a two-stage analysis describes the socio-demographic, economic, health care access and health outcome background characteristics of the 1478 household respondents in the census survey conducted in the UWR and the AR and GAR; and, also the extent of health inequalities, particularly maternal and child health among the three study regions in terms of morbidity and mortalities; and the underlying causes of the health inequalities. The relative contribution of skilled HRH as health care access, and of educational attainment, income deprivation, and occupational status within the populations of UWR, the AR and GAR to health inequalities in the regions are then described.

The chapter concludes with interviewees and focus groups' views on HRH policies that can plausibly reduce MCH inequalities in Ghana and ways to achieve this.

**Socio- Demographic, Economic, Health Care Access and Health Outcome Variables of Study Regions:**

A total of 1478 respondents out of a sample size of 1500 from the three study regions participated in the household census survey representing a 98.5% response rate. At 95% confidence interval, this is statistically representative. Out of the number, 19.6%, 23.1% and 57.3% were respondents in the Upper west, Ashanti and Greater Accra regions respectively.

**Socio-Demographic characteristics of respondents' households**

**Ethnicity**

The data indicate that more than 4 in 10 (47.6%) of the respondents are *Akan* ethnic group concentrated in the home region of AR and the GAR; but none resides in the UWR. On the contrary, about 1% (0.95%) and 2% of the *Dagaba/Wala* ethnic group reside in the AR and GAR respectively. The corresponding chi-square test results in table 5.2(annex) also indicate that the in-balance in the regional distribution of the three ethnic groups is statistically significant given a p-value of 0.000 associated with a chi-square of 967.572 and based on the standard p>0.05.

**Location (space and place effect)**

Of the total respondents, 69.8% and 29.4% of households reside within easy to reach and hard to reach locations respectively. This means generally, 7 in 10 respondents reside in easy to reach or urban and peri-urban locations. Majority of these (85%) reside in GAR, with 7.7% in the AR; and only 6.5% reside in easy to reach locations in the UWR. This means, conversely, more than 4 in 10 (44%) of the 510 respondents who reside in hard to reach areas are located in the UWR and the remaining 56% are in the AR (50%) and GAR (6%). The differences in the location accessibility of the respondents per the chi-square test results in table 5.2 (annex) are significant.

The following views expressed by participants of the IDIs support high migration rate and health care accessibility challenge as determinant of health and health inequality between the UWR in the north, and the AR and GAR in the south

> 'There are very few hospitals in the north, few health facilities. Apart from that, distances between communities are such that you need to transport somebody over long distances so accessibility is one of them; and physical accessibility where you have to be closer to the health facility to be able to access health; then the other burden, financial accessibility which is again indicative of the level of poverty in the northern sector compared to the southern sector and the migration trend is telling you that many more people are poorer there and have no opportunities as much as the others in southern Ghana. Sometimes, if you even look at the national health insurance, yes, you may even have a facility but for somebody to move from one point to the other may even cost more than the subscription fee to belong….' (R3).

Health client focus group holds similar views regarding migration and health care accessibility challenges

'But here (north), the means of transport are not even there. **..**even the road is far;… we are pleading that at least a CHPS compound will be here for us so that easy access to health care'(FGC 17-24).

Health professional focus group also corroborates the above views

'In the north, when they are pregnant they do not want to attend antenatal clinic. They do not know the reason why they have to spend time to go the long way to health facility' (FGP25-32).

**Sex and marital status**

Sixty-four point one percent (64.1%) and 35.9% of the respondents are females and males respectively. Out of these, 63.0% were married, 4.7% widowed, 2.9% divorced, 1.2% separated and 4.1% cohabiting while 24.0% were single. The regional sex distribution data in table 5.2 (annex) indicate that out of the total female respondents (947), 65% (563), 18% (157) and 17% (150) are in the GAR, UWR and AR respectively; while 46.7%, 31.6% and 21.7% of the males reside in GAR, AR and UWR respectively. The regional distribution of the female respondents to the questionnaire on contraceptives or family planning, pregnancies and related outcomes, antenatal care, delivery and post-delivery newborn and maternal care; as well as the newborn care outcomes are also statistically significant as per the chi-square test results in table 5.2 (annex).

**Age distribution**

Respondents who were 19years old or less formed 5.5% while 29.9% and 38.7% age between 20 to 29years old and 30 to 39years old respectively; respondents between ages 40 to 49 and 50 to 59years formed 12.1% and 8.6% respectively; while the remaining 5.2% were 60years and above. This means more than 8 in 10 (86.6%) respondents are in the reproductive age group of 15-49years of which 55%, 24% and 20.5% are in the GAR, AR and UWR

respectively. Respondent household sizes ranged from 1 to 2 (7.6%), 3 to 5 (14.3%), 6 to 10 (25.5%), 11 to 15 (19.1%) and 16+ (22.9%); thus, an average household size of 8.5.

**Socio-Economic characteristics of respondents' households:**

The chi-square test results in table 5.2 (annex) indicate that the socio-economic differences between the UWR and the AR and GAR are statistically significant with respect to the selected variables thus respondent's power to make economic decisions in their households, occupation and whether they earn income; their levels of formal education; possession of household assets like television, car, radio and mobile phones among others; their living conditions including access to safe drinking water and good sanitation facilities; and the floor and roof finishing of their housing. Further, whether they use their assets to access health care particularly car, mobile phone, radio, television, and the number of household members with health insurance cover?

**Decisions about household purchases**

Decisions regarding household purchases of goods and services are made by 46.8% of respondents themselves. In addition, 24.1% decide jointly with their partners. However, for 24% and 2.6% of respondents, such decisions are made by their partners and others respectively. This means more than 7 in 10 (70.9%) respondents are involved in decisions regarding their household purchases of goods and services including health care services. Out of this category, 17.7% reside in UWR whilst 19.5% and 62.8% are in AR and GAR respectively.

The data are also supported by the perspectives of the health clients FGD thus

> 'The head of the family is the father. For example, my husband is the head of the house, so, if the children, or we are not healthy, some of them are sick and he says 'oh mama take her to the hospital because the first aid given is not working', then you

have to do it; but if the father is not there, the mother can also do the same; so, sometimes, if you are given the date, and you know that today you are supposed to go to the clinic for your service(s) then you go' (FGC17-24).

Health professional focus group expressed similar views

'Because they (northern women) have their own TBAs, they do not know the essence of antenatal; even during labor, they deliver at home and they have their own medicine …may see attending hospital as not their culture…and this is where the prevention comes in' (FGP 25-32).

In another typical instance,

'A pregnant woman came to deliver and we listened to the fetal heart rate; it was fetal distress so, we wanted to do caesarean section for the baby... this northerner said unless the husband was here, she would not sign the consent form for the operation to be done. We did all we could, not even shaving the private part unless the husband is there. Unfortunately, we lost the baby' (FGP8-16).

**Occupation, Income and Wealth indicators**

Respondents were mainly traders or sellers (25.3%); civil or public servants constitute 17.1% with another 7.1% being company employees; farmers and hairdressers or dressmakers form16.6% and 16.1% respectively. The rest are into craftsmanship (5.0%) and construction works (3.9%); whilst 8.4% were students. The study found statistically significant difference in regional distribution of occupations thus only 38 civil or public service and company employees in the UWR compared with 36 and 283 in AR and GAR respectively or a chi-square of 206.952 with a p-value of 0.000 compared to the standard p-value of 0.05.

Out of the respondents with occupations, 69.0% earn cash income and an additional 3.9% earn in both cash and kind; whilst 0.7% earn in kind only. However, 26.4% of respondents do not earn income from the work they do; that is, one in more than every four respondents do not earn income. The regional variations of 244 income earners and 118 non-income earners in the UWR compared with 282 income earners and 192 non-income earners in the AR and 820 income earners and 80 non-income earners in GAR is statistically significant; with a chi-square of 109.901 and a corresponding p-value of 0.000.

Health professional FGD also affirmed the high economic deprivation and poverty in the three regions in the north.

> 'I have not been to the north, but my sister works in the north at Kadelso; she narrates the story like when they come for child welfare clinic or weigh their children, they will tell you they don't have money and that is why they don't attend the CWC. But in the south, attendance is very high, people are happy to care for their children; and so those children in the north are likely to suffer from these public health diseases' (FGP33-40).

**Educational attainment**

Out of the total respondents, 11.3% have no formal schooling, 29.4% have only primary education, and 31.7% have secondary education whilst 25.4% have higher education. In other words, 40.7% of the respondents have no secondary level education. Table 5.2 (annex) indicates a significant regional variation in, for example, higher level educational attainment in favor of the southern regions.

The qualitative data from the IDIs also associate low educational attainment and corresponding health-disadvantage with the three regions in the north,

'Education and socio-cultural barriers were linked to the relatively high illiteracy rate of the northern regions; education, there is a complete gap between the northern and the southern sectors. Meanwhile, we all write the same exams. So once we have high illiteracy rate, it contributes to people having inadequate knowledge. Of course, some of our cultural beliefs and norms also serve as contributory factors to the declining health indicators in the northern sector' (R8).

The health professional focus group supports the above assertion.

'Sometimes, they lack knowledge about the health care being provided to them. Because they lack that knowledge, they don't know the importance of receiving that service. Also, when you consider the northern and the southern parts, you see that the illiteracy rate up there is very high. So, if they do not understand, they would not come out for the exercise (FGP24-32).

**Access to mobile phones and mass media**

Indications of respondents' access to essential health information, education and counseling as well as emergency health services were measured by their ownership and use of mobile phone, access to and frequency of use of television, radio and newspaper or magazine.

Of all the respondents, 91.9% personally own cell phones of which 63.6% were seen with the phone in their possession at the interview time. Out of those who had cell phones, only 37.3% (552) ever used their phones to contact a health worker; and still a smaller proportion of this contacted the health worker on such occasions for health counseling or advice purposes. The regional variation in this indicator is again statistically significant as table 5.2 (annex) indicates. However, there is no significant variation in health workers giving specific instructions to pregnant women to call them at the onset of labor.

A vast majority of all respondents (93.6%) watch television. Of these, 52.4% (755) watch it every day; 23.3% (355) watch it almost every day and 11.8% (174) watch it at least once a week. A similar proportion of 93% of all respondents listen to radio out of which 56.9% listen every day, 22.0% (325) listen almost every day; 8.5% (126) listen at least once a week.

Health client focus groups corroborated the findings.

> 'In the south, in addition to the better health personnel, access to the health education is much due to it being on the television, radio and even information service for people to share ideas on those things unlike in our community here' (FGC17-24).

**Access to transportation services**

In addition to the ownership of cars presented above, the study found that 16.7% (247) and 11.0% (163) of respondent households' own motorbikes and bicycles respectively; a further 13.7% (202) of households have access to community transport system within their compounds and 61.2% (905) have it within their community. However, 22.3% (330) have no access to community transport system; that is one in less than every five households does not have access to community transport system. Of the households that own means of transport, 15.9% (235) use it several times every day; 30.9% (457) use it daily; 14.7% (217) use it every other day and 13.5% (200) use it weekly.

Out of those that use their own means of transport, 42.8% (632) use it to do business, 18.7% (277) use it to send children to school, 48.7% (720) use it for religious and social activities; and only 28.6% (423) use it to access health care.

Health clients focus group further confirm that

'In the south, all commercial drivers sending pregnant women who are in labor to the hospital, it is a must do; and they the drivers have agreed to that and that is the policy; but here (north), the means are not even there. If you do not get 'nyaaba' (motorking) or a motorbike, imagine a pregnant woman suffering in labor and climbing 'nyaaba' or a motorbike or a bicycle! It is so awful and dangerous! No means of transport in our communities. Even the road is far. We are pleading that at least a CHPS compound will be here for us so that easy access to health care' (FGC17-24)

Health clients in the Tema Metropolis in the GAR also corroborated the transport plight of women in labor in the three northern regions particularly in the rural areas.

'One pregnant woman in labor that I saw being interviewed on television who was about to deliver. There was nobody in the house so a woman came in with the husband because they were just passing by and heard the pregnant woman shouting; there was nothing and nobody to take her to the hospital. The man was having a bicycle and if you see that bicycle for a pregnant woman to sit to be taken to the hospital, it is very serious! And the road too that they had to pass through was very bad for the woman to sit on that bicycle. The man was very scared and was telling the wife to hold the lady, the lady was shouting. In fact, I was even crying when I saw her in labor with that kind of problem. So, before they got to the hospital, the woman lost the baby because she was bleeding so much and nobody there to help her' (FGC1-8).

**Water and sanitation**

Respondent household's water and sanitation situations in the two geographical areas were assessed using safe drinking water source and safe toilet facilities as indicators. Table 5.2(annex) shows significant regional variation between the UWR and the two southern regions.

With regards to access to and quality of drinking water and sanitation, 27.1% (401) of respondent households drink water from pipe within compound or yard; 15.4% (227) from public pipe/stand pipe, 21.5% (318) from borehole or tube. In addition, 29% (428) and 2.8% (42) drink sachet water and bottled water respectively; and 0.9% (13) from protected well. However, 1.8% (27) households drink from river and 1.4% (21) from unprotected well.

Respondent households use varied types of toilet facilities. Out of the total respondents, 29.8% (440) use flash or pour flash toilets; 13.7% (202) use flush of piped sewer toilet, (154) 10.4% use flush or septic tank; while 17.1% (253) use pit latrine and 11.8% (175) use pit latrine with slab. Thus 83% of respondent households have access to safe toilet facilities. However, 14% have no safe facilities, that is, 3% (44) use pit latrine without slab or open pit and 11% (165) use the bush or field.

Out of the households with safe toilet facilities, 45.8% (677) share with other households whilst 48.6% (718) do not share toilet facility with other households. Of those with shared toilet facilities, 32.9% (486) share with less than ten other households while 23.4% (346) share with more than ten other households.

Health client focus group also asserted that health and health inequalities in the north and south of Ghana are determined by good sanitation and water. According to them

> 'The healthy person is someone who is always neat and the environment is always clean. You can see that 'the person is very strong, the person does not fall sick; even the children they are very clean, even the food that they eat he takes care and the environment. In the case of water, the people in the north in the dry season suffer a lot, food and then water sometimes. I do not think some of them will have good health and diet in this case' (FGC9-16).

Health professional focus group holds similar views of water and sanitation and effect on health and health inequalities

> 'Some part of the north, because of this kind of inadequate portable water and the rest the people (health professionals) who know the work very well, do not want to go there. They feel reluctant, so it is difficult to find people who want to go there to render service to the people' (FGP1-8).

**Housing**

Generally, respondents' housing conditions seemed good. For example, nearly 9 in 10 (89.5%) households live in housing with health-promoting main material of finished floor, such as cement, tiles and terrazzo, woolen or synthetic carpet and linoleum or rubber carpet. Only less than 1in 10 (7.8%) households have natural finished floor of earth or sand. More than 7 in 10 (71.6%) households also use metal as main material for roofing their dwelling with an additional 7.6% (112) using ceramic or brick tiles. The number of rooms used for sleeping in households range from a low of none to a high of fourteen rooms.

**Access to electricity supply**

This factor was considered alongside the household assets ownership such as car, television, radio and fridges to determine the regional wealth quintile distribution under the Ghana DHS (GSS, GHS & ICF International 2015, 2009; GSS and NMIMR 2004). The chi-square test in this study found significant regional variation in the distribution of car, phone, and media access among other related factors between the UWR and the AR and GAR.

Health professional focus group in the study asserted that the social amenity deprivation in the three northern regions render them unattractive to health professionals particularly those from the southern sector

'They consider this our area not to be like the cities such as Accra, Kumasi and other regions. So mostly when they are posted here, they know very well that some of those privileges that would have been enjoyed down south virtually will not be here. So, they do not come. Even those of us who are also here, the staff attrition rate is also very high. We train the people alright but at the end of the day, all of them have gone back (south) so that has always been a problem' (FGP25-32).

Interviewees also support this view and blame the situation on the Government.

There is persistent doctor refusal of posting to the north and Government is not bold on deprived area incentives and addressing the unattractive amenities in the north (R4).

**Access to Quality Health Care**

The study surveyed respondent households' health based on selected evidence-based high impact life course health service interventions. These include, but not limited to, access to family planning, health information, education and promotion; antenatal care with immunizations, nutrition and malaria prevention, prophylaxis and treatment; skilled attendance at birth; as well as critical post-delivery care services for both newborn and mother.

Interviewees in this study assert that inequitable access to services of health and related professionals is most important determinant of the MCH outcomes inequality between the north and south.

'The Human resource challenge, even though we do not have the adequate numbers in Amansie Central district, yet still, the district hospital we have not less than three (3) doctors but I do not think this same opportunity exists in the three northern regions. Also, regarding posting of health personnel, whereas in the south, say in my district

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even though some areas are deprived but you can still encourage and post people to such areas; but in the north, it is a serious challenge to post health personnel to the north to work' (R6).

They further emphasized the view

'Talk about the services that those in the south enjoy that are not available in the three northern regions especially in UWR. For instance, people are sick here, they need to undergo certain investigations early for treatment and they are not available, the equipment are not there; the human resources are also not available...... people are dying of preventable diseases; if the human resource and other equipment were equally distributed…..we are deprived in a way in accessing health services. We are also looking at staff mix….; we may have some staff but these are not the cadres that we need because we are critically short of doctors; if we want to improve health we are looking at Physician Assistants particularly for the peripheries, they will be the frontliners; issues of midwives, if you want to curb maternal and neonatal mortality' (R8).

Their assertion is shared by the health professional focus groups

'If I know that I will go to a health centre (south) and be attended to by a doctor, I would not want to go somewhere I will be attended to by somebody of a lower rank. So most often than not you will see the various ranges of staff are in one health centre. Meanwhile, in the north here we can find one doctor in a whole hospital and that in a way impedes the quality of health service that we get' (FGP25-32).

**Health insurance cover for households**

The extent to which respondent households are covered by the national health insurance scheme was assessed in this study in terms of the numbers of usual household members who have health insurance.

The data indicate that more than 4 in 10 (46%) respondent households have only between one and three members of the household covered by health insurance; another 4 in 10 (40.1%) households have between four to seven members covered. However, only less than 1 in 10 (5.7%) households have between eight and ten members covered by health insurance. Given the above stated average household size of 8.5 members, on the average, only 5.7% of respondent households have all usual household members covered by health insurance. There is statistical significance in the regional variation as indicated in table 5.2(annex).

Health client focus groups believe that the population in the three regions in the north does not have adequate health insurance cover.

> 'They (north) do not have money to take even transport to the place. At times, they have to walk a long distance before they reach the hospital; now even with health insurance, they do not have money even to go to the insurance office and register so a lot of them do not have insurance' (FGC1-8).

**Access to High Impact Health Care Intervention Services:**

Various studies have shown evidence that access to quality health care services have, among related factors, immense influence on reduction in newborn and maternal deaths in particular (Zere et al 2012; GSS 2011; Gupta et al 2011). Household respondents described their extent of coverage and utilization of high impact MCH interventions in the Ghanaian setting, and the health outcomes. These include malaria prevention, care and treatment, family planning, antenatal care, delivery and post-delivery care.

**Malaria prevention, care and treatment**

The study found that in as high as more than 3 in 10 (31.2%) households, no member has an insecticide treated bed net; 14.7% (218) of households have only one member with a treated bed net which can be used for sleeping; 13.5% and 8.3% households have two and three members having the net respectively; 20.4% have between four and six members having the net; and only 2.1% households have eight members having the nets.

Health client focus groups also asserted that access to malaria prevention services are limited resulting in malaria still being the commonest cause of morbidity among the Ghanaian population

> 'Sometimes I fall sick and my family members too; for instance, once a while they fall sick of malaria so I think it is not the best. This place the commonest disease is malaria; and what brings about that? It is about these mosquitos…some mosquitos breed in our waters then we get malaria. And I also heard that these mosquitos do not breed in dirty waters but rather clean waters if it is not stored properly' (FGC17-24).

**Family planning services**

Access to and utilization of family planning, antenatal care and other reproductive health care services by respondent households assessed indicate that 22.1% (326) of household women aged 15-49 and their partners were doing something or using any method to delay or avoid getting pregnant whilst 32.7% (552) were doing nothing. Further, 35.5% (525) had ever used something or tried to delay or avoid getting pregnant; but 26.3% (388) had never tried any method. The result is consistent with the 2014 Ghana DHS which found contraceptive prevalence of any method among women aged 15-49 years to be 23% but slightly increased to 27% among currently married women using a method (GSS, GHS & ICF International 2015). The administrative data on contraceptive prevalence among women aged 15-49years

in 2014 also indicated 22% representing a slight drop from 23% in 2011 (Ministry of Health 2015).

Both table 5.2(annex) of this study and the 2014 Ghana DHS results present regional variations indicating the UWR as worse-off in family planning services.

Respondents' knowledge about the place(s) to obtain family planning methods and the type of provider from whom they access the services were additionally assessed. The data showed that nearly 6 in 10 (59.1%) respondents knew where to obtain family planning services. More than 3 in 10 (32.2%) of these named government hospitals as the place they can access the service; an additional 7.0% and 4.5% know about the Government health Centre and the CHPS respectively. The remaining 13.4% and 4.1% can obtain the service from private clinic and pharmacy shop respectively. For their information and education on family planning in the last few months through the mass media, specifically, more than 5 in 10 (55.9%) heard about family on radio but 10.1% had not. In the same period, more than 4 in 10 (45.1%) had watched something about family planning on television whilst 9.1% had not; and another 18.0% of respondents had read something about family planning from the newspapers or magazine but 18.3% had not.

**Antenatal care services**

A wide range of high-quality ANC services are required once conception takes place. This includes the timing of the initiation of the services (first trimester), the average number of pre-delivery antenatal visits (four plus), and the adequacy and quality of the standard package of services as enumerated above. For example, Ministry of health-Ghana (2015) asserts that the high intra-partum still births (41%) recorded in 2014 could have been reduced with high quality antenatal care and safe delivery services. Generally, midwives and doctors are the skilled providers of these services.

On access to and utilization of antenatal care, 55.5% (821) of respondents see someone for antenatal care during pregnancy whilst 1.2% others do not. Of those who see someone for antenatal care during pregnancy, 17.6% (260) and 27.8% (411) see a doctor and a midwife respectively whilst 10.0% (148) see a nurse. More than 3 in 10 (34.1%) respondents access antenatal care services from the government hospital.

An additional 9.0% and 3.7% receive the care from government health centre and CHPS respectively; whilst 12.4% use private clinic during pregnancy. Regarding early initiation of antenatal care, less than 5 in 10 (44.1%) respondents are able to access their first antenatal services within the first trimester of pregnancy and more than 5 in 10 in the second trimester. For this first visit, 18.3% received the services from a doctor and 23.0% from a midwife. This means only 4 in 10 (41.3%) receive their first antenatal services from a doctor and or midwife; 8.8% others were attended by a nurse or a CHO or CHN. Out of these, 37.5% received this first antenatal care from a government hospital, health center and community clinic whilst 12.9% were attended at private clinics. Four plus visits (4+) ANC coverage at labor onset was a low of 37.7% of respondents. This means less than 4 in 10 ANC clients met the policy target. Table 5.2 (annex) however indicates that regional variations are not statistically significant with respect to first trimester visits with chi-square of 2.281 and a p-value of 0.32; but not in the case of four plus (4+) ANC visits. Additionally, regional variation in access to ANC services of doctors and midwives is statistically significant.

 All respondent ANC clients received the full range of vital antenatal health checks (includes fetal heart beat checks) from the providers except 5.9 % who missed out on one check or the other. Respondents also received the package of vital counseling on various necessary pre-delivery preparations (financial, transport, clean clothes, and food stuff, among others); breastfeeding immediately after delivery; tetanus toxoid vaccination; danger signs during

delivery; as well as counseling on using a skilled birth attendant at delivery and family planning.

Additionally, they were educated on the things to look out for which might suggest problems with the pregnancy and where to go if any such complications set in, among others. For example, in Ghana, malaria has been a leading cause of morbidity and mortality, pregnancy-related complications and even intra-partum and maternal death through anemia. This requires adequate information and education of pregnant mothers on malaria-related risks.

The results however indicate that less than 4 in 10 (32.7%) respondent households had any bed net during pregnancy. Of these, less than 3 in 10 (24.1%) slept under a bed net every night; and another 12.8% never slept under any bed net. More importantly, less than 5 in 10 (46.3%) took a drug to prevent them from getting malaria during the pregnancy including Sulphadoxine pyrimethamine (SP) and artesunate combination; with yet a lower proportion of a little more than 4 in 10 (45.5%) taking the drug during the antenatal visit.

About 5 in 10 (49.5%) ANC clients received injection in the arm to prevent them and their unborn baby from getting tetanus; and less than 3 in 10 (28.8%) received de-wormer to prevent intestinal worm infection.

With the exception of 1.9% of respondents, pre-delivery preparations were made by ANC clients and they usually discussed such preparations with their husband, mother-in-law, mother, friends and relatives, or a health worker.

One high impact maternal and child health intervention in the Ghanaian health system is the mobile phone technology in health project which basically helps to improve clients' health care access in rural areas in particular. The system links the health provider to the target clients, mother and baby or child for uptake of essential maternal and child health services at

the scheduled times through automated mobile phone prompts to the client (telemedicine approach). For example, immunization and child welfare clinic schedules among others are targeted. The system thus encourages mobile phone contact between health workers and clients particularly in the case of midwives and doctors and their maternal and child health clients. Household respondent mothers were thus asked if any health worker gave specific instructions to call them at labor onset.

The results indicate that generally less than 4 in 10 in each region, had such instruction from a health worker. Besides, more than 3 in 10 other respondents (35.3%) received no such instructions from any health worker. Regional differences range from 30.1% in GAR through 37% in UWR to 38.7% in the AR. Table 5.2 (annex) indicates that there is no statistically significant regional variation in this variable.

Similarly, just more than 3 in 10 respondents (33%) received specific instructions from any health worker to deliver at a health facility, out of which 22.8% were instructed specifically by either a doctor or a midwife. In addition, about 3 in 10 (28.7%) received instructions to deliver at a health facility between the first trimester and the third trimester but before delivery. Clients who were given such instructions were usually given explanations for the recommendation. They include expected delivery of twins, position of the baby, hypertension or edema or blurred vision, previous caesarean section, first delivery, bleeding and history of prolonged labor. These ANC outcomes again reiterate the potentially high power of the quantity and quality of ANC services received to influence the pregnancy and birth outcomes of both mother and newborn within the two categories of ANC clients, that is, the with access and the without access to skilled ANC provider particularly the doctor and midwife. Besides the health workers, more than 4 in 10 (43.4%) respondents received recommendations to deliver at a health facility from their husbands, mother-in-laws, mothers and relatives and

friends; but the big difference here is the absence of the scientific justification in such lay recommendations, especially for clients associated with the enumerated high risk factors to serve as the compelling factor or high motivation for ensuring delivery by a skilled birth attendant.

Generally, respondents had knowledge about one complication in pregnancy or the other. They are severe headache, blurry vision, reduced or absent fetal movement, high blood pressure, edema of the face or hand and convulsion; others are excessive vaginal bleeding and severe lower abdominal pain. Similarly, respondents were able to mention some complications during child birth that need medical treatment. They include excessive vaginal bleeding, foul-smelling discharge, high fever, baby hand or feet comes first, baby in abnormal position, prolonged labor, retained placenta, raptured uterus, prolapsed cord, cord around neck and convulsion. This further underlines the importance of quality antenatal and obstetric health information, education and counseling for pregnant women on the pregnancy and child birth related risk prevention and the associated good health outcomes; and therefore, access to the services of a skilled provider such as midwife or doctor.

**Delivery and Post-delivery care services**

Against the backdrop of maternity services being free under the National Health Insurance Scheme, respondents' access to skilled assistance at birth was assessed with the view to determine any significant regional variations in relation to the density of doctors and midwives providing the services in the respective regions. The results in Table 5.2 again indicate statistical significance in the numbers and the pre-delivery, delivery and post-

delivery care outcomes. The UWR is worst-off in doctors' and midwives' density as well as the maternal and neonatal health outcomes.

The study found that 7% of respondent households had their last delivery at home. Less than 4 in 10 (36.6%) delivered at a government hospital, health centre, community health center or health post. One in ten (10.8%) also delivered at private health facility. Respondents who delivered at home cited facility being too far (or no transportation); or too much cost; and facility not open as reasons for their choice. Respondents who delivered at a health facility did so because they experienced complications or the facilities are safer and provide better care. More than 4 in 10 (41.4) went to the facility to deliver accompanied by their husband, parents, relatives or friends.

Only 9.5% of the deliveries were assisted by a doctor and 30.8% by a midwife. This means only 4 in 10 (40.3%) deliveries were attended by a skilled provider. An additional 12.7% of the deliveries were attended by a trained nurse, community health officer and health extension worker. On the other hand, Traditional birth attendants, community health volunteers, relatives and friends assisted 5.1% of the deliveries.

More than 2 in 10 (21.4%) respondents experienced one or the other delivery danger sign of convulsion 0.9%), long labor (13.7%), baby hand or feet coming first (2.9%) or excessive bleeding (3.9%). Out of these, 2.2% were told by the TBA (trained or untrained) to go to the health facility. Indeed, 11.4% of those who experienced these danger signs eventually delivered through caesarean section.

Generally, respondents received adequate delivery care but more than 3 in 10 (34.3%) respondents encountered inadequacies and quality concerns such as their baby not wiped (dried) before the placenta was delivered; baby placed on the floor immediately after delivery or baby not wrapped in a clean cloth before the placenta was delivered. In addition, babies

born to 5% of the respondents did not cry or breath easily and therefore required some life-saving interventions. However, nothing was done in 11.8% of the situations requiring such interventions.

Time interval after birth before breast feeding was initiated ranged from less than one hour (11.2%) through one hour (10.1%) to nine days (0.3%). Less than 3 in 10 (23%) respondents were able to breastfeed their babies for at least twelve months and at most twenty-four months. The breast-feeding policy of Ghana promotes six months exclusive breastfeeding and continued alongside complementary feeding up to twenty-four months. This is to ensure that the newborn reaps the maximum health (includes brain and immune system) and growth and development benefits associated with breast-milk especially the first breast-milk immediately after delivery. Respondent mothers stopped breastfeeding early due to mother and or child being ill or weak, or child died; breast problem (includes nipple and not enough milk) and child refused as well as mother as a worker.

Pre-discharge health check for baby and or mother was as low as 2 in 10 (21%). In 8% of the situations, respondents had the birth attendant checking on their health and or their newborns' health before leaving the facility or place of birth. In addition, 8% of mothers and their babies did not receive any health check from a health provider within the first week of birth; and another 5.6% received only one visit. The rest had between two and as many as twenty-four health check visits.

Less than 3 in 10 (23.3%) clients of the first week after birth health check services were seen by a doctor or a midwife; and an additional 7.4% of respondent mothers were seen by a nurse or a community health officer. Mostly, the health checks were done in government health facilities but sometimes in an NGO or private facility. Only 4.7% of respondents received this service at home. Respondents were generally given body and breast examinations checking

for heavy bleeding (in mother) among other danger signs. They were also counseled on danger sign for newborn, benefits of breastfeeding and general nutrition, among others. Health outcomes of some mothers within the first 30-days after delivery include nervousness, feeling hopeless or worthless, restless and fidgety and depression.

Apart from 7.3% of respondent mothers whose newborn did not experience any illness episode within the first 30-days after birth, the rest experienced one episode or the other of varying frequency between one and six episodes. All the affected respondents, except 1.4% of them, sought medical help as frequently as once up to six times, depending on the case from a doctor, midwife, nurse or community health officer. However, others were seen by traditional birth attendants. Reasons for respondents' inability to seek help from skilled providers include expectation of self-resolution of the illness; the facility was too far or no transportation; cost of treatment or service too high; facility not trusted or poor service quality; or the traditional birth attendant did not allow. GSS, GHS & ICF International (2015) also found similar reasons for inability of some mothers to access similar skilled services.

Generally, respondents had their children between 0-59months of birth immunized against the childhood killer diseases as part of the delivery services received (depending on the provider), the first week health check visits and subsequent child welfare clinics or home visits by the community health officer or nurse; or through the periodic NID activities. With the exception of 5.8% immunization clients who were immunized in private facility, all immunization services were provided by public sector health providers; and more than 5 in 10 (52.4%) respondents had their children immunized against polio through the NIDs and related vaccination campaign exercises. Routine administrative data and other official surveys show that preventive and health promotion service delivery in non-public facilities is often low or neglected (GHS-CR 2016; GSS 2011)

However, 2.1% of respondents' children never had polio vaccination through the NIDs. In addition, 10.3% of mothers ever took their child to the health facility for immunization and the child was unable to receive the immunization for lack of vaccine; long waiting time and negative attitude of the provider. Generally, mothers had education on the importance of immunization for their child and the immunization cards filled out by the health provider as the service was given. In addition, except 3.2% of the clients, mothers were told when to return for the next immunization as well as the common side effects of the vaccine. Table 5.2 (annex) indicates that for the above delivery and post-delivery care in the first week and first one month of life of the newborn, there are significant regional variations with the UWR most likely, for that matter, to experience the worse of the outcomes in view of the limited access to skilled providers.

**Health Outcomes in Respondents' Households**

In addition to the significant regional variations in health risks and illness episodes among respondents and their newborns, the study found statistically significant worse mortality outcomes among the population in the UWR compared with the GAR and AR. Table 5.2 (annex) depicts this with respect to respondent households' general mortalities recorded in the past ten years (up to the time of the study); miscarriages and still births and neonatal deaths.

Only 3 in 10 (34.9%) respondent households had no general death within the period. This means nearly 7 in 10 respondent households had between one and five deaths. Of the 350 household deaths, more males died (61.4%) than females (38.6%). Seventy-three (73) of the deaths occurred in the UWR compared with 103 and 174 deaths in the AR and GAR respectively. In relation to their respective sample populations, these figures translate into 25%, 30% and 20% for the UWR, AR and GAR respectively. At 25% death rate in relation to

it being the smallest in population size, this is alarming an inequality gap. The regional average ages of persons who died were 34, 39 and 52years for UWR, AR and GAR respectively; besides, the data indicate that GAR has the highest average life expectancy at birth of 118years, followed by 108years in AR with the least in the UWR of 70years. Most deaths occurred between 2007 and 2010 with the highest deaths recorded in 2008. There was no death below the age of 2years. However, 7.1% died before their fifth anniversary. Majority of the deaths (22%) occurred among age 60 and above. The deaths were commonly (49%) caused by slight illness followed by blood pressure related deaths (9.4%).

Interpretation of the survey data on neonatal deaths in the regions as rates is also consistent with the chi-square test results. For example, at 34 deaths to 144 live births, 21 deaths to 114 live births and 120 deaths to 493 live births in the UWR, AR and GAR respectively, the deaths translate into rates per 1000 live births of 236/1000LB; 184/1000LB and 243/1000LB respectively. Again, in relation to its (UWR) total population which is five times and four times less than those of AR and GAR respectively, the health difference is indeed worrying. The pattern is also similar to the 2011 Ghana Multiple Indicator Cluster Survey results which indicated the UWR as worst-off in neonatal mortality compared to AR and GAR at the rates of 41 per 1000 live births, 27 per 1000 live births and 20 per 1000 live births respectively. In terms of percentage contribution of neonatal deaths to respective infant mortality rates, these translate to 61%, 63% and 53% for Upper west, Ashanti and Greater Accra respectively. This means over 60% of infants die in the region in the first month of life (GSS 2011).

Furthermore, studies have concluded that most neonatal deaths occur within the first six days of life (GSS 2011; GSS and NMIMR 2004). Studies have also shown that neonatal, maternal and child mortalities are strongly associated with lack of or inadequate skilled provider care particularly in rural areas (Gupta et al 2011; GSS 2011, Zere et al 2012; UNICEF-Ghana

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2014). The variation pattern is the same for the still births recorded in the three regions in this study.

Overall, however, the survey data indicate that more than 9 in 10 (96%) respondent households (826) did not have any neonatal death whilst the remaining 4% had neonatal deaths. In all, 175 neonatal deaths were recorded comprising 105 (60.0%) sons and 70 (40.0%) daughters. More than 7 in 10 (78%) respondent households (780) also did not have any miscarriage or still birth whilst the remaining 22% recorded a total of 264 miscarriages or still births. Almost 3 in 10 (29%) of those who had still births, had between two and four still births.

In conclusion, the foregoing two-stage analysis of the primary data in this study, supported by secondary country data, point to the broad findings that;

- There are statistically significant health inequalities in health status, access to health care or skilled HRH separating the UWR, shown to be worse-off, from the GAR and AR. In particular, the statistically significant geographical accessibility inequality with the UWR worst-off in health service access and health outcomes compared to the AR and the GAR point to the crucial importance of increased geographical presence of skilled health care staff in the UWR or north in order to even equality of health care access and reduce the health inequality gap between the two sectors.

- The predictors of variances in health outcomes such as neonatal deaths are health care access, education, occupation, income among others.

- The study design and data analysis processes, techniques and tools employed to arrive at these findings were iterative and reflexive. For instance, the convergent mixed method design enabled effective integration of data or evidence from varied sources-primary and secondary data, quantitative and qualitative. In addition, the SPSS variables frequency and chi-square analysis are computerized software based hence an

objective electronic statistical analysis was done. Further, appropriate quotes from FGDs qualitative data were also used to support these findings. The findings are also consistent with available secondary data from previous national surveys and official reports as well as empirical studies done elsewhere involving Ghana on health care accessibility and health outcome inequalities as referenced in this and preceding chapters of the thesis.

The study has thus added to public health/ health services intelligence for service planning in contexts such as Ghana: even geographical accessibility to health care is statistically significant and might provide a more effective and immediate policy option to reduce health inequalities between communities with poorest health outcomes as in UWR and endowed communities with best health outcomes as in AR and GAR than education, income and occupation related interventions.

Discussions of the findings in the ensuing chapters further support this evidence.

**MCH Inequality: Income, Education and Occupational Explanations**

The two-stage analysis of the primary and secondary data in the preceding sections affirmed the importance of health care access, education, income and occupation, among others as determinants of health inequalities between the UWR being the worst-off and the AR and GAR the better-offs. Geographical accessibility to health care/HRH was statistically significant and supported by other secondary data and qualitative data as a most likely and immediate policy option that might reduce the inequalities in maternal and neonatal mortality rates between the two geographical areas than the other determinants.

Specifically, in this section, the third stage analysis of both primary and secondary data is done using the SPSS hierarchical logistic regression and the hierarchical negative binomial regression techniques/tools. This is supported with statistics from national surveys and quotes from interviewees and FGD participants to validate evidence on the relative variances explained by income, educational attainment and occupation of incidence and total neonatal and institutional maternal mortality data in the three study regions.

The main findings are that though respondents' income, education and occupation yielded negative coefficients: thus -0.72, -0.83 and -1.45 respectively which imply their negative relationship with incidence of neonatal deaths; such variables were not significant unlike access to skilled health care provider service. In terms of variance of total neonatal mortality explained, education, occupation, region and access to radio information were significant as control variables as well as health care access, in the hierarchical negative binomial regression further analysis. For example, neonates in the UWR are most likely to die than those in AR and GAR; and women without formal education are most likely to lose their neonates than those with formal education.

On the contrary, the GDHS 2003-2014 evidence indicated that mother's formal education was insignificant in explaining neonatal mortalities.

Health client focus groups also suggest that access to health education/promotion could potentially mitigate negative health seeking behavior among mothers without formal education and reduce risk of maternal and newborn death

> 'We lack the [health] information in the north, when I am pregnant I do not have anybody telling me about my baby…I even give birth in the house without seeing a health worker. I can die or the baby can die' (FGC 17-24).

Interviewees in this study similarly support the view that equitable access to adequate health messages/education well delivered in culturally acceptable and comprehensible ways could plausibly impact positively MCH coverage and outcomes among mothers without formal education.

**Explanation of Incidence of Household Neonatal Deaths**

The third-stage analysis of the primary data in this study revealed the variances in household neonatal deaths (dependent variable) reported by reproductive age women that were caused by their access to antenatal care, delivery care and postnatal care services provided by doctors and midwives; compared with the degree of variances explained in turn by their education, occupation, income, information through radio and similar socio-economic variables.

A hierarchical logistic model was first used to analyze the predictors of neonatal death incidence. Here the study sought to model neonatal death as a binary outcome:  had recorded death before versus had not recorded death before. In all, three models are estimated as shown in Table 5.3(annex) Model I captured the respondents' background characteristics (i.e. region, location etc.) and access to information as control variables. The Model II estimated the independent effect of access to skilled health staff during pregnancy, delivery and after delivery on neonatal deaths, and Model III examined the combined effect of the controlled variables and the health care access variables on the dependent variable.

Overall, the analysis indicates that model III constituted the one with the highest percentage of variance explained relative to the remaining two models. It explained 22% of the variation in neonatal deaths. This means that the joint effect of the factors better explains incidence of neonatal deaths at the household level compared to only the background characteristics (i.e. region, location) and access to information or access to professional health care. Hence, for the sake of statistical parsimony the study concentrates on Model III for interpretation of the

results. Nonetheless, Table 5.3 (annex) shows that though some of the controlled variables yielded negative coefficients which imply their negative relationship with incidence of neonatal deaths, such variables were not significant thus -0.72, -0.83 and -1.45 for respondents' income, education and occupation respectively unlike access to skilled health care provider service.

**Explanation of Total Household Neonatal Deaths**

Further analysis using hierarchical negative binomial regression was conducted to probe for the determinants of total neonatal deaths per a reproductive age woman as a count variable. Similar to the logistic regression model, Model III is given consideration in the interpretation of the results due to its highest percentage of variance explained.

Table 5.4 (annex) highlights the fact that some of the controlled variables were significant in explaining frequency of neonatal deaths. These include region, education, occupation and access to radio information. As regards regional variation, the study noted that women in the UWR are more likely to record higher number of neonatal deaths compared to those from the AR (ORR = -3.14) and GAR (ORR = -2.70) Regions. In addition, women with formal education (ORR= -3.83) are more likely to record lower neonatal deaths compared to those without formal education.

**Neonatal Mortality Trend by Mother's Education: GDHS 2003-2014**

On the contrary, the 2003, 2008 and 2014 Ghana Demographic and Health Survey reports indicate that formal educational attainment was insignificant in accounting for neonatal mortalities thus mothers without education and those without secondary plus education have better health outcome trends. For example, table 5.5 below depicts that whereas between 2003 and 2014 these categories of mothers experienced positive impact on their babies' neonatal mortality rates, that is, 19%, 29% and 35% reductions in NNM rates for the 'no education', 'primary' and 'middle/JHS' groups of mothers respectively, NNM rates for newborns of mothers with 'secondary+' (secondary or higher education) worsened by a 33% margin.

**Table 5.5: Trend in Neonatal Mortality by Mother's Education (2003-2014)**

| Year/Mortality /Wealth Quintile | Neonatal Mortality By Mother's Education (per 1000 Live Births) | | | |
|---|---|---|---|---|
| | No Education | Primary | Middle/JSS/ JHS | Secondary+ |
| 2014 | 30 | 35 | 28 | 36 |
| 2008 | 38 | 35 | 23 | 38 |
| 10yrs Before 2008 | 37 | 49 | 43 | (27) |

Source:  2014 DHS Report, GSS and GHS; 2008 DHS Report, GSS and GHS; 2003 DHS Report, GSS and NMIMR.

**Neonatal Mortality Trend by Wealth Quintile: GDHS 2003-2014**

Further evidence from the three five-year demographic and health surveys also tends to suggest that another social determinant (s) of health, other than wealth or income could be more important in narrowing the health inequality gap between Ghana's two geographical divides. As in the case of a mother's educational attainment and trends in neonatal mortality rates, newborns of mothers in the poorest, second and middle wealth quintiles experienced

relatively more positive mortality reduction margins than those in the fourth and highest wealth quintiles.

**Table 5.6: Trend in Neonatal Mortality by Wealth Quintile (2003-2014)**

| Year/Mortality /Wealth Quintile | Neonatal Mortality By Wealth Quintile (per 1000 Live Births) | | | | |
| --- | --- | --- | --- | --- | --- |
| | Poorest | Second | Middle | Fourth | Richest |
| 2014 | 32 | 26 | 26 | 31 | 40 |
| 2008 | 31 | 27 | 44 | 31 | 31 |
| 10yrs before 2008 | 37 | 40 | 49 | 38 | 42 |

**Source: Ghana 2011 MICS Report, UNICEF and GSS; Ghana 2014 DHS Report, GSS and GHS; Ghana 2003 DHS Report, GSS and NMIMR**

For example, NNM trends in table 5.6 above indicate that a 14% reduction in NNM rate was achieved among mothers in the poorest quintile compared with only 5% reduction in that of mothers in the highest quintile. Similarly, NNM rate reduced by 35% margin among the second poorest quintile mothers compared with a 19% margin among mothers in the fourth wealth quintile.

Interviewees also consider education, income or wealth and occupation as important social determinants of health inequality in the north and south of Ghana premised on the relatively high health care deprivation of the north. These factors then operate to further limit access of the poor, the vulnerable and socially-disadvantaged groups to quality health and functioning resources and opportunities.

'Once we have high illiteracy rate, it contributes to inadequate knowledge; there are some health messages that you can easily paste for people to read but majority will not be able to read and make meaning out of it; so, limited access to health because of illiteracy; illiteracy, not just somebody able to read or write English but even the local

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language, if people can read through night classes or non-formal education, they (health messages) can still be pasted there. Of course, some of our cultural beliefs and norms also serve as barriers to or contributory factors to the declining health indicators in the northern sector' (R8).

Health professional focus groups also corroborated that maternal and newborn health inequalities between the north and the south are significantly caused by elements of education. Participants describe, basically, the wide literacy gap and ignorance that limit access to health promotion as indulgence of some northern clients in certain harmful cultural health practices and beliefs. Health professionals in the north explained that

'Sometimes it is always the cause of our women or ourselves; One will be pregnant but she will not attend the antenatal clinic….; a lady here who was pregnant about eight (8) months but she had not attended clinic even once. When you complain, she says she is always busy; some local substance called 'masugo', they like using it, preferring that one to the hospital. At times that is what is causing the problem and before they get to hospital, they die and say it is the nurses.  Ignorance also makes our people not to go to the hospital and before they get to the hospital to deliver, a bad thing will cause' (FGP 25-32).

Health professional focus groups in the south similarly perceive that some northerners

'…do not want to go to hospital, as my sister was saying; they have a lot of local medicine/herbs; so, even delivery, when they are pregnant they do not want to attend antenatal clinic because they have their own TBAs. So, they do not know the essence of antenatal; even during labor, they deliver at home and they have their own medicine and even if it is PPH they have their local herbs that after chewing, it

(hemorrhage) stops. They do not know the reason why they have to spend time to go

the long way to health facility' (FGP9-16).

Again, health professional focus groups in the south describe the way some religious beliefs

affect those who belong to the faith

'Most of the religions prohibit them to do certain kind of things that will give them

health, like family planning…. especially the artificial ones. So they just give birth, no

family planning. Also, when you are pregnant you don't eat egg, for instance. Most of

them have this perception about using herbals' (FGP1-8).

Health professionals assert that the above health seeking behavior and MCH outcome

differences between the north and south are due to limited access to health

education/promotion services

'Sometimes lack of knowledge about the health care being provided to them; because

they lack that knowledge, they don't know the importance of receiving that service;

also, when you consider the northern and the southern parts, you see that the illiteracy

rate up there is very high. So, if they do not understand, they would not come out for

the exercise' (FGP1-8).

Health professional focus groups further emphasized the importance of access to health

education/promotion in improving MCH service coverage and outcomes

'In the north they render the health care at the door step of them through the CHPS

compounds; but because of religious beliefs, most of them do not want to patronize

the health facilities or the CHPS compounds over there. I can remember we went for

some research in the north there, precisely Yendi. They have this perception that if a

woman is in labor, the woman should go to the TBA than going to the hospital; so

when they are in labor they prefer going to the TBA than the professional

nurses;…..sometimes, they claim that the position in giving birth, they want to squat but here they (health professionals) want you to lie down. But even with this squatting, this time we are encouraging it. We have some chairs here which they can choose to sit or squat to deliver; so, if you come and you feel you are not comfortable lying down, they will allow you to squat. That squatting issue is one of the reasons why they prefer the TBA. So, it is about the education on the availability of such services at the health facilities. It also means they need more of the chairs in the rural areas for them to also see and then make their own choice. The CHPS programme which she said is available but they don't access them, I am saying it is because of the lack of education; the education did not go down well. If they understand the reason why they have to visit the health care centre then they would not go to the TBA for anything and the dangers involved going to the TBA. The well-educated ones, I don't think that they go to the TBAs. That is why I cited Yendi; you know they have the highest illiteracy level; this was our thematic area. Most of them, the cases that are very critical the women end up dying, losing their babies but still they prefer the TBA to the health workers' (FGP1-8).

Health client focus groups in the north supported the assertion of their health professional counterparts about the need to emphasize accessible quality and adequate health education rather than formal educational attainment to address MCH inequalities.

'We lack the information in the north, that is, when I am pregnant I do not have anybody to tell me that I should go to the hospital so that they will check how my baby is. So I will be in the house till I give birth; I even give birth in the house without seeing a health worker coming around me. I think complications can really set in and I think I can die or the baby can die' (FGC17-24).

In the south, however, access to

> 'The health education is much due to it being on the television, radio and even
> information service for people to share ideas on those things but in our community
> here I have never seen anything like that; though we have television but how many
> people can afford? So even if the information people will come and announce to our
> understanding, in our language so that we can all understand and we will also be like
> them. Even if the facilities are not there we know we have people coming to educate
> us on our health issues' (FGC17-24)

Empirical evidence in England, as indicated in chapter two also shows that sustainable
reduction in health inequalities can be achieved through informal training or education of
parents and families on good parenting; resulting in beneficiary children attaining very high
educational levels and good health outcomes (PHE 2014).

Income poverty, as a barrier to accessing quality health care resource was similarly strongly
rated. In particular, they explain that the maternal and newborn health inequality is largely
due to the pregnant women's financial inability to transport themselves to the nearest
appropriate health facility. In other words, they are unable to reach qualified health
professionals to receive quality high impact life course MCH interventions. They include
antenatal care, early treatment of pregnancy-related complications, skilled attendant delivery
and maternal emergencies and postnatal and newborn care; that the situation of these mothers
in the north in particular, is usually further complicated by the long distance of travel
involved, the lack of motorable roads (no road, riverine communities etc.) and even the
unavailability of commercial vehicles, most often except on their weekly market days, from
the nearest community with the motorable road. Consequentially, most of these women in the
absence of qualified health staff resort to traditional health practices including use of various

herbal preparations during pregnancy and TBAs at delivery. Participants stress the dangers and high risk to both mother and the newborn which translate into the relatively higher maternal and newborn mortality rates in the regions in the north compared to the southern regions. Thus, income poverty could place second to human resource availability or health care accessibility and effective utilization where adequate investment is made to place qualified health professionals and quality close-to-client services in such poor and in hard-to-reach communities.

Health client focus groups also suggest that high poverty levels operate to increase maternal and newborn risk of mortality through poor maternal nutrition

> 'Newborn and maternal deaths also occur because of the mother's feeding background. May be if you are pregnant and you go to the hospital, they educate you on what to eat to get blood and other nutrients. When you get to the house, because you are not having money…, but taking the "dawadawa" too can help. So sometimes it is from the food. If you are not having enough blood for the child to suck to also become healthy and come out, by all means the child will come out and will not be a healthy person and you yourself may not survive because of that' (FGC25-32).

This means though high poverty in the north engenders high malnutrition and related poor health outcomes like anemia-related maternal and child deaths and low child developmental potential; adequate nutrition counseling on consumption of available nutritious local food stuff like the "*dawadawa*", millet, vegetables and fruits could still promote their good health and vitality.

For instance, health client focus group in the Amansie Central district attested to comparative healthy food-related health-advantage the northerner has over the southerner eating such

natural and unadulterated food ingredients; because a northern friend living in their community is healthy as she depends on such foods

> 'Here, right now, she (northerner) does not normally fall sick…may be due to the food that she eats… She has regular access to vegetables, unlike the north, and so…normally, she eats the "*ayoyo*" and the "*dawadawa*"; that one, I have heard that it is more nutritious than the oily foods that we eat here.' (FGC33-40)

Northern counterparts in Nadowli district confirmed that

> 'If you are poor, you cannot buy. Nowadays, everything is high. Before you go to buy even fruits, you will use money. If you have to buy food and you don't have, you would sit down and be worried. What will I eat to be healthy, what will I give to my children? So, that one too can bring un-healthiness' (FGC25-32).

Fortunately, nature being kind to the poor northerners,

> 'It is the "*dawadawa*" that is helping us; we use "*dawadawa*". These days, we are in the raining season, we cook vegetables but before you cook, you wash them with salt. If you don't have meat, you add the "*dawadawa*" and tomatoes. The salt will kill the germs and the "*dawadawa*" will give us blood. So that is helping us to be healthy.' Besides the "*dawadawa*" serving as the protein, it also serves as healthy spices unlike the non-local spices even made of chemicals which are sometimes even not good for our health' (FGC25-32).

## MCH Inequality: Human Resource Policy Explanation

Results of the two-stage regression analysis in the preceding section indicate that access to MCH services of skilled health providers significantly explains variances in both incidence and total neonatal mortalities in respondent households in the three study regions of UWR,

AR and GAR. Conversely, education, occupation and income despite showing negative coefficients do not significantly explain variance in incidence of neonatal mortalities but significant regarding variance in total neonatal mortalities.

**Perspectives of Health Stakeholders**

Health clients in the GAR, for instance ascribe their relatively better health status to improved access to various preventive health, health-promotion and obstetrics and clinical care services from skilled health care providers. Health clients in the Ada East district vividly described their satisfaction with quality preventive and health-promoting services that they receive daily and monthly in their homes, at community durbars, and antenatal clinics from the trained CHOs or CHNs.

> 'The nurses educate us on how to live and manage our surroundings; so, education is part; they give counseling to the community people; and also home visits. They visit your home and advise you on how to stay…how to keep your surrounding healthy and everything. We feel their presence in our homes very much; yes, it helps so much. In addition, they give immunization to the children in the communities. Indeed, every day, every month they advise you if your child is crawling, how to take care of her; or how to take care of her when she starts to walk; they even call to say that now your daughter is this or that date so she has to be doing this, she has to be doing that; you the mother, you have to do this or that; like the way they have been crawling, you have to put everything on top of something; you should not leave things like knife, heater and others about; rather somewhere that they cannot touch it; they always check on us the moment we come to antenatal or weighing or at durbars, they attend to us; and the way they speak to us we are always happy and also understand them; yes, we are always happy with them' (FGC9-16).

Their colleagues in the Tema Metropolis emphasized, not only the preventive health care but even more access to quality clinical and obstetric and gynecological services of midwives and doctors

> 'First, where we were leaving, we did not have these dustbins we have been pouring our rubbish or dirty things. But now the government has provided each home with two or three and that has helped a lot. At first, we used to leave our rubbish just like that. And when you go for antenatal or birth, you used to pay huge sum of money but nowadays due to the health insurance, you are able to go for antenatal without paying anything; it has really helped. Also, at first, even when you come to the hospital, there was no doctor around. Before you could see a doctor, it would be one o'clock. These days, however, we have about five doctors on duty; we have a lot of nurses around so the government has done so much about the health services for us' (FGC1-8).

Consequently, clients in Tema Metropolis, regardless mother's educational background, are satisfied with the accessibility and quality of health care services and generally enjoy good health. They emphasize the benefits of quality health education they receive at antenatal clinics

> 'We are health-educated because you come to antenatal, we have good midwives and doctors; they teach us so that even if the person has not been to school, he or she knows that I have to clean my areas, do this or that and it brings good health to our environment' (FGC1-8).

Health clients in the Nadowli district also emphasized the importance of government investing appropriately in population-based health providers and services thus protection against the mosquitos and malaria

'Government is doing well because of the mosquito nets (distribution and usage); then, employment to the youth for cleaning the environment' (FGC25-32).

Health clients in the Jirapa district bemoan the poor access to life-course services of doctors, midwives and community nurses in their distant and hard-to-reach communities compared to other communities. They perceive themselves to be worse-off in terms of not having the basic primary health care unit, the CHPS compound. They therefore receive child health care services including immunization and weighing monthly from the St Joseph's hospital nurses in the Jirapa town.

Other factors are the distance and lack of transport, and even money to buy petrol for the neighbor lucky to own a motorbike, when one falls sick at night. It is indeed a night mare experience. Also, for health education on diseases and general health situation for the mothers and rest of the community, the visiting nurses usually advise them to

'Organize ourselves whenever we are free… and invite them to come and give the health talks. For antenatal and delivery services, we travel to the Jirapa town. We are not the same because other communities have CHPS compounds but here we do not have. They who have CHPS compounds are better than us' (FGC17-24).

Health clients in similar communities in the Nadowli district also strongly advocate for resident community-based trained health providers to improve quality of life course MCH services, coverage and outcomes in the three regions in the north

'They (government) should put in place more CHPS compounds for those communities that are far away from us; because here, when it rains, some of the communities are blocked away; you cannot get to that community or they cannot come here to get treatment; so if CHPS compounds are situated at those communities, they can get their treatment there instead of all of us coming to pile up here to get

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treatment; it will also help save life on time. Indeed, there is a place there called Sombo; there is a river so, … if you are seriously sick, you cannot get here because (non-river) means of transport cannot go there; you too you cannot cross the river; that means you will be there then pass away' (FGC25-32).

Earnestly therefore,

'We are appealing for motor able roads and some motivation or incentives for the nurses in the villages so that when they hear that somebody is sick, they will be willing to go. They should provide them with motorbikes and strong cars so that they will help in treating patients' FGC25-32).

Of course, counterpart communities in Tema Metropolis in the GAR already articulated the ease with which they access quality health care and health related services and strongly advocate for communities in the north to be given fair access to health care and related services in order to reverse the relatively very high reported maternal and newborn mortalities there; and therefore, help narrow the wide health inequality gap separating them. They accordingly sum it up as

'To compare the southern communities or some communities to my area, I can compare it to the northern regions. As we said earlier, all these things have really helped us that is the education, the teaching, the nurses, the midwives and the doctors, the facilities, the hospitals all these things they have helped us; the antennal services and all that; so they should provide them with all these things too and it will help them; it will reduce the amount of babies and mothers dying, it is so bad, so disheartening' (FGC1-8).

Health clients' empowerment to utilize these life-course MCH services also plays a significant role to improve health outcome distribution and reduce inequalities. Basically,

health clients in this study make personal decisions to access their health care needs though most commonly at the household level, it is the head of the family's responsibility to do. The head of the family can be a male or female. However, barring some traditional practices in some northern cultures where a pregnant woman needs to subject this personal decision-making power to the husband's consent, the one who holds the financial or economic power to access the health care wields the most influence on clients' personal decision-making power. In general, males make more of such decisions or, at least, have a say in matters of the household's utilization of health care and services. Thus, it can be the father, husband, brother or uncle depending on who heads the family or wields the economic power in a given case. Thus, the bottom line is financial access and the proximity of quality health care services and for that matter qualified health personnel to the client or patient. Thus, Ada East health clients asserted that;

> 'Sometimes, it is the finance. When the money is not there, the father can also not decide. The person can be in the house and something else can happen; if the person that is sick is not having money, somebody in the house who is big or has the money can say take this money and go to clinic. In other words, '…nothing like 'unless you do not hear from me, do not go to the clinic' (FGC9-16).

Their colleagues in the Tema Metropolis undoubtedly go with this conclusion and even beyond as

> 'It is yourself and nobody else; and that comes to the fact that health education too has helped, that is, television, radio and internet. It has really helped; previously, sometimes you may not feel well you just step out to the drug store and tell them you don't feel well but then due to health education we know that you don't have to do that. Self-medication can kill so no matter what is wrong with you don't just go to the

pharmacy shop and buy drugs on your own account. You need to go to the hospital and see a doctor so the health-education has helped' (FGC1-8).

Health clients in the designated less endowed district, Amansie Central in the AR share in the experiences of their counterparts in the Ada East district of the GAR describing their power in decision-making on their health needs as

'It is my husband; my husband; my father; my father; my mother; my mother; my sister.' Therefore, 'when you wake up early in the morning you are not feeling well, they will send you to the hospital; and also provide the necessary items for me to go to the hospital' (FGC33-40).

It does not mean though, that when one wants to receive health services from a health worker, hospital or clinic, the one cannot go until that person, be it the husband, father, mother or sister permits them. In fact,

'I can go by myself but if I am really not well, like I cannot walk or if I do not have money for transportation, he will give me the money; that is why I am saying that he will influence me to go to the hospital' (FGC33-40).

Their male counterparts in the endowed district, Asante-Akim in the AR have similar experiences in that regarding

'I will take decisions for my own health. But a household where we are a family, and the family is being headed by say my father, or an uncle; when the need arises, he will tell or support you to access health. In my family it is the responsibility of my father to provide good health care for us. In the community at large, it is the duty of the King and the elders to ensure that the community's health is catered for' (FGC41-48).

In the case of health clients in the deprived community in the Jirapa district, it is

'My husband or the head of the family, they take the decisions regarding our health care needs.' For instance, as a pregnant woman 'if I am sick or my child, my husband takes me to the hospital to see the health workers' (FGC17-24).

The story is however, completely different in their counterpart less deprived community in the Nadowli district whereby

'Concerning the family, most at times it is the mothers if you are not feeling well. You have to decide to send yourself to the hospital. It is not parents who tell the wife to go to hospital. The hospital too, sometimes we get information from the nurses on may be immunizations and other things but in the family, it is the mothers who decide whether or not to go to hospital' (FGC25-32).

In addition,

'Small time they do radio announcement that if you are sick, go to the hospital; if you are due for labor or review or other, go to the facility. You would not sit for anyone to come and tell you to go to the hospital if you have to; unless it is someone who is poor or ignorant who will be sick and not attend hospital. We also get information from the District Directors, Regional Directors and the nurses. So, every small thing like cholera it has spread and the information has gone round that if you are sick go to the hospital; that is why they are coming to the hospital' (FGC25-32).

This means that equitable access to skilled health providers providing client counseling services on health seeking-behavior could empower them to own their health, make informed decisions on and appropriately utilize health care timely and regularly; and thus improve their health outcomes.

**Explanation of Incidence of Household Neonatal Deaths**

The primary data of this study are consistent with above empirical and official survey data. The proportion of variance in neonatal mortality differences between the UWR and the AR and GAR explained by access to skilled health provider services suggests health care access could be far more significant compared with income, education and occupational characteristics of the study respondents (Model III of the hierarchical logistic regression model and the hierarchical negative binomial regression model in tables 5.3 and table 5.4 as annexes).

Generally, it was observed that reproductive age women's access to skilled health care provider services (doctors and midwives as proxy skill-mix) had a negative influence on neonatal deaths. More specifically, access to antenatal services is associated with an 11.8 chance (ORR = -11.8) of reduction in neonatal deaths. This suggests that an increase in access to antenatal services of these skilled health providers significantly reduces the incidence of neonatal deaths. Similarly, access to skilled delivery services is significantly associated with reduction in neonatal deaths (ORR = -2.82). Thus, the historical unequal access to and utilization of maternal health services of skilled health professionals separating the UWR from the AR and GAR plausibly explain better the MMR and NMR inequality gap between the north and the south.

**Explanation of Total Household Neonatal Deaths**

Model III of the hierarchical negative binomial regression in table 5.4 (annex) again established that access to skilled health provider services is significantly and inversely related to total neonatal deaths. Table 5.4 shows that each of the health care access factors, which are access to skilled antenatal (ORR = -1.96), skilled delivery (ORR = -2.45) and skilled post-natal (ORR = -2.72) services has a corresponding negative effect on number of neonatal deaths. Given this outcome, the analysis does not only reinforce the idea that reproductive

age women's access to health and reproductive health care services of doctors and midwives is germane in reducing the incidence of neonatal deaths, but further highlights the role of health care access in dealing with the frequency of neonatal deaths as well.

Interpretation of secondary data on socio-economic determinants of regional inequality in maternal and neonatal mortalities in Ghana further support the assertion that equitable regional geographical access to skilled provider care services could narrow the health outcomes gap in NMR between the three regions in the north and their southern counterparts more than wealth, education and occupation.

**Trend in Density of Doctors and Midwives by Region: 2008-2014**

The regional trends in the density of doctors and midwives based on secondary data gathered and synthesized from relevant national and international institutions and bodies show huge regional variations between 2008 and 2014 (GSS, GHS & ICF International 2015). However, there were marginal regional shifts in doctor density and quite significant shifts in the midwife situation between 2013 and 2014.

Thus, 0.7% proportion of national doctors to the UWR stagnated between 2008 and 2014 despite its growing population which forms 3% of Ghana's total population. From table 5.2 (annex), the region also has the largest proportion of hard-to-reach locations compared to the AR and GAR, and proven to be statistically significant in this study. In terms of density relative to UWR population however, there had been an improvement in ratio from 1 to 47, 130 populations in 2008 to 1 to 37,189 in 2014. For the same period, the AR and GAR had had disproportionate share of 18% and 55% of national doctors to a national population proportion of 18% and 15% respectively. In density terms, these also translated into an improvement from 1 to 9,936 and 1 to 5,431 in 2008; to 1 to 9,045 and 1 to 2,383 population

ratios respectively in 2014. The 50% net improvement margin in doctor situation between 2013 and 2014 in UWR, from table 5.7 (annex) is therefore largest compared with 9% and 19% for Ashanti and Greater Accra regions respectively. This is suggestive of a plausible narrowing of the perennial yawning inequality gap in the doctor to population density ratios.

The above doctor density figures are also consistent with the Ghana Health Service's Human Resource for Health (HRH) trend analysis for the same period which pointed to a general improvement in overall HRH workforce situation in regions (GHS 2015). The report further indicated that the GAR remains the most endowed in HRH followed by the AR region with the UWR as the least endowed. Indeed, from table 5.7, the numbers of doctors in the UWR for the first time in years of stagnation recorded a 50% increase in doctors from 14 in 2013 to 21 in 2014 through local doctor attraction and retention initiatives undertaken by the region itself (Ministry of Health-Ghana 2015).

There was much more improvement in the Midwife to the Women in Fertile Age (WIFA) density ratio from 2010 to 2014 due to the decentralization of midwifery training schools to all regions to increase the production of midwives to ensure improved access to quality health care particularly for the attainment of the MDGs 4 and 5 targets namely, to reduce Child and maternal mortalities by two-thirds and three-quarters margins respectively by 2015 (GHS, 2015; Dovlo, 2007).

The improvement relates to narrowing the density inequality gap particularly between the UWR and the GAR. Based on table 5.8 (annex), whereas UWR as at 2014 had maintained a density ratio of 1 to 1,150 from 2010, the GAR rather increased from 1 to 1,350 in 2010 to 1 to 1,550 in 2014; whilst AR closed the gap from a 1 to 1,700 ratio in 2010 to 1 to 1,350 in 2014. This means in effect the UWR was even better off in Midwife to WIFA density ratio compared to the two southern regions. The 2014 GHS Annual Report confirmed that despite

the increase across regions, the AR recorded the highest margin of increase in 2014 though the GAR remained the most endowed in total numbers of midwives (GHS 2015).

The 2003, 2008 and 2014 Ghana Demographic and Health Surveys' results further indicated that while the GAR and AR receive gross disproportionate services from doctors compared to the UWR, the latter receives, for some periods more services from its available midwives than those of midwives in the two counterpart southern regions. Table 5.9 (annex) on skilled assistance delivery by region for example indicates that, as a result of services of midwives balancing the equation in the UWR, the region recorded a net improvement margin in percentage skilled assistance delivery of 91% from 2003 through 2008 to 2014 compared with 43% and 13% in AR and GAR respectively.

**Regional Maternal and Neonatal Mortality Trend by Access to Skilled Provider Services: 2010-2014**

A close look at table 5.10 (annex) on the regional trends in institutional maternal mortality ratio (iMMR) indicate that while the UWR stagnated, and sometimes worsened in MMR between 2010 and 2014, the AR and GAR achieved net positive reduction. For example, using 2010 as the base year, while the iMMR of UWR worsened from 138 per 100,000 live births to 161 per 100,000 live births, those of AR and GAR had improved with 14% and 11% positive reduction respectively. However, between 2013 and 2014, all three regions recorded positive improvement with net ratio reduction of 17%, 8% and 7% for the UWR, AR and GAR respectively.

Interviewees in this study also asserted that increased presence of skilled MCH Providers in UWR after 2012 explains the faster improvement in net iMMR reduction of 17% between 2013 and 2014 compared with 8% and 7% for AR and GAR respectively

'People are going to school after some three or four years. When they come back with new knowledge, they are able to help; and it is helping; like maternal health, our numbers in terms of midwives are increasing and that is helping to reduce our maternal mortality' (R8).

Similarly, table 5.11 (annex) on the regional neonatal mortality trend for the three regions between 2003 and 2014 indicates a general reduction in the NMR per 1000 live births. The margin of improvement is largest in the UWR compared to the two counterpart regions that is, 40%, 26% and 14% for the UWR, AR and GAR respectively. For example, five years before the 2008 DHS, NMR in the UWR was 62 per 1000 live births. This had dropped to 37 per 1000 live births in 2014. This means a narrowing of the then yawning gap between, for example, the UWR and GAR for the same period whereby the latter, before 2008 had recorded an NNM rate of 29 per 1000 live births compared to the former's 62 per 1000 live births.

Results of the chi-square test and the regression analysis models thus tend to support the above arguments. Specifically, the statistical significance in the regional variations; and the degree of neonatal death variance explained by the numbers and mix of the skilled providers of the high impact maternal, newborn or child health care interventions and outcomes of the respondent households have been suggested. The interpretation is also consistent with indications given above of a possible narrowing of the yawning health inequality gap between the UWR and the AR and GAR in this study, in response to the combined effects of marginal shifts in the doctor density ratios and significant shifts in ratios of the midwives. Their (midwives) services between 2003 and 2014 would plausibly have compensated for a part of the yawning doctor and service gaps.

Interviewees' and focus groups' narratives not only corroborated the above arguments and quantitative evidence but also rated equitable access to services of skilled health care providers above formal education, income or wealth and occupation in reduction of health outcome inequality between the north and south of Ghana. Thus tables 5.12 and 5.13 (annexes) indicate 6.5 out of 10 score overall rating for human resources compared to 3.5 for all other underlying social determinants of health and health inequality that the participants enumerated in the study.

Additionally, their narrative accounts provided very useful contextual insights into the how and why effective HRH policy actions and intervention implementation could better account for reduction in health outcomes inequality and thus leverage the quantitative evidence. Thus,

> 'The root cause, number one, I think there should be some policy on the distribution of human resources. If they are there, they should be enforced; if people are posted to deprived areas, they should ensure that they come; and there should be some incentives for those who are posted to the north here; because here people are not privileged like those in the southern part. People think that when they come they will not have access to quality education and all those things' (R7).

On the contrary, the Trade Unions assert that

> 'Government is not bold enough to say I have posted you and that is where you have to work;…those who have influence, once they are posted there, they find their way back or they never even go at all. Then, there is no pull factor, meaning that in Ghana we have universal salary structure; once you are a doctor, a nurse at whatever grade, you receive the same salary everywhere in the country. So if the south is better by way of education and locum opportunities, you send me to the north where all these are not available to me and my children and, to receive the same salary, then the

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chance is that I will not go. So instead to put in incentive packages like rural or

deprived area incentives, this is not there. Then the over centralization of the

government systems, everything is based in Accra. So why do I move to Tamale or

somewhere up there and come from there for my simple documentation?'(R4).

Further, Human Resource Practitioners similarly rate access to skilled MCH Provider

services over education, income and occupation as most likely explanation for the variances

in the households' neonatal and maternal deaths. Thus

> 'Health education alone with human resources available can prevent many of the
> undesirable factors' (R11).

The law-makers fully support the above assertion that in the Ghanaian context of achieving

universal health coverage and reducing maternal and neonatal mortality variances, access to

skilled MCH Providers comes first

> 'First is the human resource, if we have human resource, the other factors can be
> played down' (R3).

Local government officials in the south also emphasized the human resource factor as a more

important explanation for the inequalities in MCH outcomes between the north and the south;

thus

> 'The first one has to do with the human resource itself. The number of doctors, I have
>
> read and heard from both the print and electronic media; most of the doctors are
>
> located in the south here; then as the Ghana Health Service reports, even when the
>
> doctors are posted to the northern part, they do not want to go. The turnover rate is
>
> even quite high and there are reported cases of lots of areas in the northern regions
>
> that virtually lack access to the health facilities. So, the human resource is one' (R10).

**H**ealth clients in the Tema Metropolis in the GAR equally stressed that

'As a family, you have to have a doctor or a midwife/nurse near you; that you have their phone number so that when something happens, you will call her first. In terms of reproductive health care, it is the midwives. When we are pregnant and come for antenatal, they educate us about the child in our womb and us. And when we deliver how we will take care of ourselves and if delivery is due and you cannot deliver by yourself but by caesarean section, you make sure to see a doctor that will take care of you. The midwives have really done so well. If I hadn't gotten pregnant, I wouldn't have known that they were so good, so caring. Sometimes, late in the night, you call a midwife and tell her that oh, something is wrong with me and she will have time for you and tell you do this, do that, they are really good' (FGC1-8).

The perspectives of even their colleagues in the Ada East, the designated deprived district in the region is not different because,

'If you go to antenatal clinic, the midwives have been helping us at the OPD. In terms of distance, you have to walk and come; but, if the sickness you cannot walk, you have to join car. The Fitkope too, where the doctors are you have to take a car. It is 10kilomemeters away from the Ada Foah Health Centre. A Medical Assistant attends to us but if the sickness is that serious, he has to transfer you to the hospital. They will give you a note or even arrange a car. One nurse will be beside you in the car to send you to the hospital. And they will even call to pre-inform a doctor over there' (FGC9-16).

In conclusion, the evidence from the various data sources from chapters two through to this chapter together strongly suggest that human resource for health (HRH) limitations are the main reasons for the inequalities in health status between the north and south of Ghana particularly, in respect of maternal and neonatal health. Thus both the hierarchical logistic

regression and hierarchical negative binomial regression evidence from this study's primary data strongly suggest that access to skilled HRH significantly explained both incidence and total neonatal mortality deaths and similarly for institutional maternal mortality; unlike income, education and occupation which were insignificant in explaining incidence of neonatal deaths; and only education and occupation less significant still in explaining total neonatal deaths compared to the variance explained by HRH. Further, evidence from trend analysis of the 2003-2014 Ghana Demographic and Health Surveys, the Multiple Indicator Cluster Surveys and various national official reports and databases suggest strongly that reduction in neonatal and maternal mortality inequalities responded best to higher increases in the density or presence of doctors, midwives and other skilled MNCH care providers in the UWR compared to the AR and GAR. The evidence further shows that mother's education and wealth/income are less significant in reducing maternal and neonatal mortality inequalities compared to HRH/health care access. Health clients and health policy-makers and providers also rated 6.5 out of 10 score points for HRH compared to 3.5 for other determinants of neonatal and maternal mortality inequalities, citing geographical accessibility limitations as major reasons for their conclusions. Finally, Mutangadura et al (2007), Olorunsaiye, (2015) and GSS, GHS and ICF International (2015) also affirmed that in Ghana and other west, east central and north African countries, poor and hard-to-reach communities were worst-off in maternal and newborn health outcomes due principally to geographical inaccessibility to skilled MNCH care provider services.

**Reducing Neonatal and Maternal Inequalities: Effective Policy Options & Actions**

In the context of the above findings, participants in this section pointed out effective ways of ensuring that the policy implications are understood and delivered. These include effective all-health stakeholder forums, engagement and consensus building on HRH and health inequality policy issues and effective inequality-reducing policy options, using good

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scientific evidence such as this one, and monitoring policy implementation effectiveness and accountability; investing in HRH, infrastructure and social amenities in UWR or the north to attract and retain skilled MCH Providers and related professionals especially at the primary health care level ; using staffing norms, properly decentralized HRH functions and budget to regional, district and facility levels, differential pay and related incentives to ensure effective HRH planning, deployment and retention in UWR/north, among others.

Interviewees and focus groups identify some HRH policy implementation pre-requisites and cost-effective interventions relevant to the Ghanaian experience and context of maternal and child health outcomes inequalities between the three regions in the north and the southern regions.

Interviewees justify their higher rating of the relative contribution of human resources to the effect that equal opportunities for health and health care services, as a resource, between the three deprived regions in the north and the southern regions could primarily be assured with equitable placement of the numbers, quality and mix of qualified health personnel in the two geographical divides. This means increasing the geographical presence of skilled HRH in UWR (and rest of the north) in numbers, quality and mix at a higher rate, over time, compared to the southern regions (Zere et al, 2012; Kojo and colleagues, 2018; Gupta et al, 2011).

This pre-condition, to the Trade Unions, has been a yawning missing gap. In addition to the one- size-fits-all salary policy in Ghana amidst wide inequity gaps in the distribution of social amenities, career, educational and employment opportunities for staff and their families cited above,

> 'The Health infrastructure, the training of health personnel, their posting and
>
> distribution responsibility is with government…and ...statistically we all know from

the last study and what we were told in Tamale in almost all these, one can say that in terms of the skilled health personnel it is still about the same 90% and 10% because people are just reluctant to move there and if you take the geographical area of the three northern regions compared to the south here, it is so overwhelming…' (R4).

According to interviewees in UWR, the failure of government in living up to its responsibility is, among others, due to the absence of a

'Strong policy on the distribution of human resources; if they are there, they should be enforced; if people are posted to deprived areas, they should ensure that they come; and there should be some incentives for those who are posted to the north here, because people are not privileged like those in the southern part; people think that they will not have access to quality education and all those things; but I think if all those things are put in place here, the motivational packages are here, there are transfer norms that if you are posted to the north, you are not going to be there forever and you can be transferred back, this will all help the situation' (R8)

Interviewees further argue that even under this perennial HRH mal-distribution situation, distribution of Medical Education Facilities remain highly inequitable. Thus, the Medical Doctors assert that

'Medical schools are down south and people are comfortable working in their geographical area of training. So, if for example about eight out of ten medical schools are operating down south and you have the UDS (they recently started even doing the clinical training about five years ago), most of the people are trained down here and they are not comfortable going up there because their families are established here, they cannot leave their families and go up there because your spouse

has a particular job and that job is not wide spread there; your spouse would become unemployed if he should go there' (R9).

## Human Resource Policies to Reduce Health Inequality: implementation processes and practices

Participants described the following human resource policies that they perceive as existing for the purpose of reducing the health outcomes inequality gap. They are mainly,

- Human resource production or pre- service training

- Human resource recruitment and employment including pay and conditions of service

- Human resource distribution: posting and transfers and

- Human resource capacity building including post-basic in-service training

## Human resource production or pre-service training

Participants described the policy intent as to produce qualified and dedicated health personnel in regions whereby each of the ten (10) regions in the country now has health training institutions training certificate and diploma nurses and midwives. According to them, their (training institutions) distribution is also inequitable in favor of the south

'These nursing and midwifery training schools have the bigger portions in the south. The doctors and other health cadres are trained in the medical schools or special training colleges but these are all located in the southern sector except one out of the four Medical schools, UDS established in the north not quite long…there is inequitable distribution of the training institutions in favor of the south, which train and retain' (R8).

Interviewees also describe the influx of southerners into institutions in UWR and sister regions without an effective bonding system as another policy limitation despite government's recent attempt to address the school distribution inequities

'They decided to open a lot more health training schools for nurses and midwives in the northern sector which will help in the production; but of course, we have these our schools flooded with people from the south and as soon as they get out of school, you have people coming in to say, can you release them back to the south? So giving them the appropriate bond with a seal, to say that this is the minimum number of years you need to serve for you being allowed to enter into their (northern sector) training school; but we just write something like an undertaking; that is not enough to send anybody to court. They are not doing it as expected…' (R8).

Health Professional focus groups corroborated interviewees' perspective on ways to achieve skilled MCH Provider production policy intent. Thus;

'By region that trains retains the northern schools train southern populations who drift away after completion because of political influence and absence of effective bonding system. We even train the post-basic midwives but, we are still lacking the midwives in the hospitals so I think if they could implement this policy whereby when you train a number of students, they will serve the region for some number of years; I think it will help' (FGP 25-32).

The Medical Practitioners and Trade Unions in the south therefore suggest complementing the training school decentralization with intake of far more locally resident trainees into schools in the north than those coming from the south. This improves retention rate;

'That would work if many of the people there are locally trained people taken from the community there. Now we have the Teaching Hospital there and I know that a good number of them are from the north; so if they finish and do their house job there and they are enticed by the region most of them would stay than before when they were trained in the south and they refused to go back. The Ministry of Health Ghana

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should also practically open up the north using documentaries; some of the people do not know what happens in the north. All that they hear is as for the north, it is difficult' (R4).

In support, the Legislators particularly described the recent move by government to scrap the long standing pre-service trainee allowance payment as an unfortunate misplacement of priority;

'This is going to disturb it a lot since the intervention has been a long standing key attraction and motivator for the youth to go into the health sector and deliver health to the people. Indeed, training more preventive nurses, bedside nurses, psychiatry nurses and midwives are what we need so that it can help reduce maternal mortalities' (R2).

**Human resource recruitment, employment, pay and conditions of service**

Basically, the bulk of the products of the health training institutions are absorbed by the government and only a relatively very small percentage by the private sector. Qualified health personnel are employed and generally paid universal salaries centrally by central government

According to interviewees the over centralized approach has not helped to address HRH mal-distribution

'First, the absence of decentralization of the personal emoluments budget to regions or facilities where they are supposed to work is a limiting factor. Instead of government to double the salary, with assured accommodation and post-graduate scholarship, after two to three years of service of any doctor who works in the northern regions, a universal pay policy rather operates in the country regardless where one works. Government's capacity to employ newly qualified health professionals is also now very limited whereby midwives and nurses are at home without jobs; reducing maternal mortalities will not work' (R.4).

**Human resource distribution: posting and transfers**

The policy is posting and transfer which seeks to equitably distribute and transfer health professionals and workers across the country to all ten regions and between the various agencies of the Ministry of Health. According to the interviewees, the staff distribution policy to a large extent has not worked

> 'It is for every person to accept to serve in these areas. Unfortunately, equitable staff distribution is only **on paper**. Postings and transfers are not driven by where the advertised vacancies exist; and the 'stick and carrot' principle is not applied either whereby you need to give preferential treatment to those people in the north, like the scholarships, you pay them a little more to motivate them. So, the decentralization of the services like to the Ghana Health Service is very important. When it is decentralized, then it is possible to use a clearly defined policy of making sure that where there is the need for a doctor, or pharmacist that is where vacancy would be advertised. We need first of all to have incentives that can send the people there; then, use staffing norms and insist on people going to where they should be; and if they do not go, there should be some form of punishment. For instance, if a doctor refuses then their salary is discontinued; but now the training program just churns out a number of health personnel then the posting becomes a problem' (R3).

The scientific basis for the job vacancy determination for each facility and geographical location is staffing norms; but for a long time now this has been absent, according to the legislators

> 'The absence of clearly defined staffing norms has been a major challenge. It was just recently staffing norms have been developed for some of the levels of health care; and at a recent health summit, the development partners asked the Ministry of Health the

big question, what next? Practical action with the available staffing norms, as key

drivers of equitable staff posting and transfer, is yet to be seen' (R3).

The effect of the mal-distribution on MCH coverage and inequality reduction, according to

the Health Client focus groups is worrying

'A woman in the north will go to the health centre and be told, "oh, the nurse here

has gone out", may be to the market because she is alone, most at times they are at

CHPS compounds. So there will be delay in offering the service to the client and that

may deteriorate that client's condition unlike the one in the south. When she misses

the staff at one facility, there is another nearby so the person can access health'

(FGC25-32).

On conditions of service policies, including various incentives, to back equitable distribution,

staff motivation and retention, participants perceive the over centralization of salary budget

administration as fundamental cause of inequitable HRH distribution

'A salary policy that has been carved out that in the HRH perspective, there is

discriminatory pay policy so that if District Assemblies are given their quantum of

funding, specifically, if the salaries are decentralized to them and, for example,

Greater Accra region's salary budget is exhausted, there is no way you can attract

more people; so this would have given the chance for the three northern regions to

attract more people because people want jobs but because the salary is centralized

even though Greater Accra Region or the southern sector may have enough staff, they

continue to employ to the detriment of the three northern regions because it is not

from their specific decentralized salary budget' (R10).

There are, however, some differential incentives intended to attract and retain skilled MCH Providers in the UWR and sister regions in the north. According to the HRH Practitioners, supported by other study participants,

> 'The Ministry of Health and Ghana Health Service have come out with some incentive packages which can at least, help people to move out of the southern sector to the three northern regions. For instance, people should be given promotion out of turn if you accept to work in the three northern regions. Instead of serving five (5) years to be promoted, we reduce your service by one (1) year. You should also be given out-of-turn study leave; instead of serving three years to qualify, we reduce for the three northern regions by one (1) year to enable people move into the periphery' (R11).

Health professional focus groups in UWR testified that this promotion policy has motivated and helped to retain some of them

> 'It helps us; that we those working in the deprived areas instead of working for five years before you get promoted, it was four years; and that thing too has really made some of us to stay here so that you get promotion earlier than your colleague who is down south' (FGP17-25).

Medical Practitioners in the south also attested to out-of-turn study-leave policy which attracted classmates upon graduation to go to the north and who are now ahead of them by way of post-graduate qualification.

> 'A typical example of the study leave incentive policy here is the postgraduate training opportunities offered to doctors who go to the north. In my personal case, while we were doing our internship, some of my colleagues in the north just after internship got sponsorship to do their postgraduate training and it was an incentive

attached to the posting. Most of them will be graduating very soon and as a result of that I realized that the subsequent batches that were coming out, you see people not readily frowning on going to the north because of that incentive ' (R9).

Besides these incentive policies, however, there are no differential financial incentives in place as articulated by the Medical Practitioners and supported by other study participants

'We also have a policy that if you accept to work in the northern regions, some additional pay or monetary incentive should be paid to you on monthly basis. This is however on paper. Health Workers in the northern sector are not enjoying this as part of their monthly pay from central government; neither are the health facility managers in the north given such a recurrent budget to disburse at that level. Indeed, this monetary incentive, at best, I hear that most of the hospitals in the north are taking their own initiative to reward or give financial incentive to staff and then of course the provision of accommodation. As you know, districts are building health accommodation for health workers who come from far to work there' (R9).

Health professional focus groups in UWR were indeed motivated by the one-time additional pay incentive

'When I became a CHN, there was something like a rural incentive they gave to we those working at the rural and deprived areas; and that thing was a very good thing that motivated us to work and do not think of running away; but for a long time now we have not heard of that thing and that makes many people to run to the south because of bribery they get something there. When the client comes, they treat and get something but here we do not get anything. That policy is a very good thing' (FGP17-25).

The Trade Unions assert that though very attractive a policy, its implementation was still-born.

> 'We used to have deprived area incentives but it ended up being urban area incentives because we were looking at it as something that would attract the critical staff to the northern sector. If I am in an area that I lack some of these things like the social amenities, I should be able to get some additional funding that will enable me push my wards to better schools down south where they are more endowed. The incentive policy was indeed very good but its implementation was stillborn' (R4).

Staff accommodation and related social amenities are generally a disincentive to staff that have to work in the north. Health Professional focus group in the south and other participants strongly rate the incentive

> 'Some policies are there that deter people from going there. When you are posted there, where to sleep is a problem; the buildings there are all thatch structures, whereas you were living in a comfortable concrete block house; you are even scared in that thatch house; such a person may refuse the posting. Also water and other things are a problem' (FGP33-40).

There should be clear and attractive policies on social amenities and defined service period to make working conditions in the north attractive. First,

> 'Housing should also be part of the policies. If, like our mother said, there is an equitable proportion of staff and I am posted there (north), if I do not get the accommodation, what will happen? I will have to go back; secondly, I think there should even be something like one is going to spend like five (5) years and come back for another person to go so that everybody will be willing to go. But the person will go and even if they wanted to come back it becomes a problem such that if you are

posting me I will never go. Because, even education, how to educate your child if there are no proper schools; I would not stay there for my child's education to go down while my sister's own is going up; so education, they should look at that too very well' (FGP33-40).

Participants think that adequate investment in appropriate holistic infrastructural development is required and not only schools. For example, Health Professionals in Amansie Central assert that

'It should not be only schools. I think the whole infrastructure should be up there; because, water and sanitation for instance, if I go there and I am not comfortable, I have to run back. So, they have to develop the whole town or region so that it will make it attractive for us to go there' (FGP33-40).

As for the accommodation and such necessary amenities, the Trade Unions think that Local Government Ministry and other stakeholders pay mere lip service

'They are more of lip service because at the Ghana Medical Association's Tamale Conference a few years back on human resource inequities in the north, assurances of political leadership in the north to assist with accommodation for doctors and others never took off.  Doctors are posted to those places and because of policies like accommodation that the District Assemblies are supposed to take care of, people in authority rather deny them and then they lose interest. I cite Dr. A as an Example. He started working at Wa Government Hospital with my brother, one Dr. B, and the two of them came down because the then Regional Secretary did not see eye-to-eye with them; just sustaining their interest. These are people that were trained in the south; they wanted to go to the north to help their fellow Ghanaians and they are experts; and the people are happy with them but for political reasons or whatever they actually

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"shot them down" so they had to come down to the south to continue the good works that they are doing' (R4)

Commitment to policy implementation is a major policy limitation. For example, the Human Resource Practitioners reminded that granting staff compassionate leave and supporting them to visit their families wherever they are, is one condition of service not being enforced.

'As you talk about implementation, it is the problem; we have implementation problems. People are not looking at the policies. The other factor contributing to this is that the social amenities are not available in the three northern regions like schools… good schools for their children, electricity, water, even markets' (R11).

Indeed, the inequality gap is so wide because the needed essential equipment and logistics are generally lacking in health facilities in UWR and sister regions in the north. Interviewees in the south consider this a disincentive especially to Specialists

'With the issue of the equipment for the services, a greater part is in the south than the north, I say like ratio of 70 to 30 in favor of the south. Consequently, all the specialists are in the south, majority of them. So the specialists should also be able to go to those areas and help' (R6).

**Human resource capacity building including post-basic in-service training**

Participants basically described existing policies under this sub-theme as staff or continuing professional development interventions for serving officers; thus, they are post-basic or post-graduate courses, short and long, training workshops, conferences and seminars. These are enjoyed through earned specified years of service after one's date of first appointment, study leave and scholarships. The policies also take into account the one's work location regarding study leave out-of-turn. Participants emphasized inconsistencies, lack of clarity, information, and other policy implementation flaws.

'The broad policy that if you are in the rural area in the northern sector, after a few years you will be allowed to further your education; you realize that practically those in the urban areas have better access to further their education. It is on paper but at times when the opportunities come for further studies abroad or some other specialized areas they give to themselves forgetting about the one in that deprived area or the northern sector sacrificing. So I think these are the things in place which should have helped but implementation is a problem. People are not willing to hold the bull by the horn to say that this is not due you because you are in the urban area; the one in the rural area is the person who needs it' (R8).

According to health Professionals in the north, there are also inconsistency, lack of clarity or information and education in the study leave policy implementation

'The policy of serve for some number of years before you can go back and further your education; mostly they always say three years, or four or more before you can go back. We do not understand why the years keep on changing and increasing. For instance, in school you will sign a bond for some number of years but when you come out, they will increase the years for you. Sometimes, your juniors will even come and go and you will still be there so to me in the northern sector, they are more or less not consistent with the number of years you serve. Some can even serve one year and, depending on where you are, they will allow you to go but some places you will work for five years but still they will tell you that you do not have anybody to relieve you so you have to keep working' (FGP25-32).

Health Professional focus group in the Asante-Akim Central District in the Ashanti region tend to support their northern counterparts' notions about inconsistencies and inequities in the implementation of the study leave policy in the north

'A colleague was saying that when you get there (north), getting the chance to even further your education is not easy; a colleague in the south with whom you completed school the same year, will get the chance to go to school to obtain first degree and second degree and you will still be at your first posting; this deters people from accepting posting to those places and that makes the staff in the south to be higher than that of the north' (FGP41-48).

Health Professionals in the Jirapa District in UWR also perceive the study leave policy as inflexible thus one's choice of program of study is restricted and sometimes does not augur well for successful career development. Its implementation practices also appear to vary between the north and south to the disadvantage, sometimes, of the former's staff.

'One may like to go and do a course which you think you can perform better in it but there are policies that will restrict you to do a course that you may not like or you cannot perform to expectation. Similarly, a CHN cannot use her certificate to do diploma course; unless you rewrite your papers, the Senior High School final examination. With this, our northern Directors seem to be very committed to the implementation but in the south, they release some of them to go and do so, they will have more of those qualified personnel over there than over here' (FGP17-25).

The attrition of study leave beneficiaries from the north to the south and abroad, according to the Trade Unions suggests the need to strengthen both pre-service training and study leave bonding system

'People access all those things, they go on scholarship inside and outside Ghana they never come back to the north. I know one of my mates who virtually would not have gotten access to medical school; we had a white man who felt that in his own way of trying to bridge this gap, he would make sure that the person was accepted into the

medical school. He completed then he made sure that he got scholarship to do anatomy to come and teach in the medical school. He went abroad, he is still abroad for so many years; he never came back…so, so many of these things happen. I know another person from the north who was given scholarship. He finished, he got a job in Akosombo and refused to go back and that story it becomes personal so…..but these are the things that also make government or policy-makers worry; they give them scholarship, put so much in them; is there a guarantee that they would go back to fulfill their posting or promise; and I think that is why even the district Assemblies they shy away from giving scholarships because you put so much in them in the hope that they will come back; but there is no law to compel them. Probably, no law works in our country. So government policies, most of them exist on paper, when it comes to implementation, it is a different thing' (R4).

**Specific human resource policies implemented successfully and reasons for the success**

Participants considered the following human resource policies as successful, though each with varying degree of success. In summary, they are

- Health staff Production
- Study Leave
- Promotion
- The CHPS strategy
- Posting

Health staff Production policy is successful in terms of training of nurses and midwives. One of the implementation conditions accounting for the success, according to the legislators, was the health trainee allowance paid to trainees in Public Sector Health Training Institutions

'The payment of health trainee allowance to pre-service trainees because of the monetary power of attracting people to the health sector to be trained to provide health care to the population; so that was very good and it was very successful but now it is scrapped' (R2).

Interviewees perceive the scale up in the decentralized health Training Schools and related train and retain policy as one other reason partially accounting for the success of the pre-service HRH production policy. Production of skilled MCH Providers increased to narrow the national HRH requirement gap

'Somehow the policy is successful but with gaps. Thus, the scaling up of health training schools for the training of health workers especially the frontline workers has actually augmented the staff situation. In spite of the challenges, it has actually improved the staffing situation compared to previously. Initially, we used to have just one or two staff manning the health centres. Now …you can boast of about three or four CHNs who can run outreaches, provide maternal and child health services; and with the establishment of the Midwifery Training schools too, we are beginning to see a rising trend in the number of midwives who are replacing the aged midwives we used to have who are retiring with waist problems and all the chronic health problems' (R8).

The associated produce and retain in region of training policy, a very recent intervention has been somehow successful due to some level of adherence to the policy by the regions. While in school, students are bonded for retention to serve in the country after completion of school

'The train and retain policy has helped regional training schools to improve the chances of increasing intake of local people and thereby improving retention; as it is more likely that because they are local people, it is easier for them to stay after

completion than somebody who trained in Accra and has gone to the north. Also, because each region now has its own Nursing and Midwifery Training Schools, they are empowered to improve their staff retention chances at the admission selection stage though political and protocol influences still remain a challenge' (R7)

According to the Human Resource Practitioners, the post-basic and post-graduate Study Leave policy implementation success is partly due to technical support from the national level to the regions

'The involvement or role of the central level, some health stakeholders as well as the MDG targets that served as drivers and, the concern about the poor health outcomes. Indeed, the Post-graduate training and retention is one example whereby the establishment of local institutions like the Ghana College of Physicians and Surgeons virtually curtailed brain drain due to specialist training programs done abroad, previously. But what we have to do now is to decentralize the training while they are even in the College such that district hospitals can be having senior consultants and Physicians there who can supervise their work and at the same time the hospitals can benefit from their services. So these to me are succeeding even though not to the best that we all want. Now, the other thing is that with the supporting health personnel, a number of health training institutions have been opened; and more training being done in terms of numbers of nurses, laboratory personnel and the rest of them. It is the policy to bring out more but of course we talk about the quality and the faculty but these are things I believe have positively impacted on the numbers' (R11).

The Legislators equally support the view that the scale up and retention of numbers trained in training region helps to reduce the rural-urban and deprived-endowed geographical inequality gap in MCH service coverage and outcomes.

'Now, many of them would by sheer force of the numbers in the urban areas, be available for posting outside' (R3)

Health Professional focus group in the Nadowli also asserted that the study leave policy has improved availability of skilled MCH Providers and reduced maternal mortality.

'Indeed, with the capacity building, and training, '…people are going to school after some three or four years; when they come back with new knowledge, they are able to help; and it is helping; like maternal health, our numbers in terms of midwives are increasing and that is helping to reduce our maternal mortality' (FGP25-32).

Again, according to Human resource Practitioners in this study, central level's involvement in the Promotion Policy implementation, to an extent, accounts for its success

'We follow up. Even though the policy is there, central level we send out promotion guidelines every year to remind the Managers that because you are in a certain area or a certain profession, you qualify for promotion. I will therefore say these two policies (study leave and promotion) have been very successful' (R11).

Interviewees and Health Professional focus groups consider the CHPS strategy or policy implementation as very successful in addressing the perennial geographical equity gap in skilled MCH staff availability and accessibility. Human Resource Practitioners emphasized its Universal Health Coverage approach

'The training and posting of CHNs to communities to provide public health and minor curative services; this was an innovation from the north, piloted there and the success story became a national policy. It is the hub of the Ghanaian Health System- a high impact rapid delivery health strategy whereby remote and rural areas without hospitals, health centres and clinics, are covered with basic primary health care services; so the CHPS concept is very good' (R11).

In a sense, the posting policy is considered successful. In the view of the Human Resource Practitioners the policy promotes active involvement of Regional health Directorates in the selection and placement of skilled health staff in regions

> 'The Posting policy in terms of the recent decentralization of the selection of staff for posting to the Regional Health Directorates; at least, they (regions) know their respective places of need; RHDs also deciding on non-management positions' inter-regional postings also helps control staff attrition; because it is left to the regions to scrutinize; so you must have good reason to leave the region; before then, you were just a manager in the north and they post someone to your station from Accra, so when we are able to decentralize properly, it works' (R11).

Frontline health staff in the focus groups lamented over the lack of incentives and even in some situations refund of genuine claims like duty performance-related travelling and transport (T & T) expenses to staff, due to lack of decentralization and failure of resource allocators to make funds available at the operational level (district, sub-district or facility). This leads some staff in such locations to create their own perverse financial incentives to make up. The cost of these perverse incentives is passed onto the poor and vulnerable client or mother thereby creating financial barrier to accessing necessary basic essential health care services to both mother and the newborn or child

> 'It is to make for my T&T' in bringing the service report to the supervisor (at the sub-district or district office) without paid T&T; or having to cover these distant villages with the services all alone due to staff shortage and without any differential financial incentive from the employer, aside the normal salary' (FGP33-40).

Legislators in this study described Government's decision to scrap the Health trainee allowance as the failure aspect of the production policy and condition for the failure of such a powerful intervention is misplaced priority and politics.

'It was a bad policy decision because somebody just woke up and said "we are wasting money"; so it is government that has failed just like she has failed to make funding available to meet provider health insurance claims' (R2).

According to the Trade Unions and health Professional focus groups, Posting and inequitable distribution has been a failure due to lack of commitment of the powers-that-be to policy enforcement practices that support HRH attraction and retention in UWR

'Names of defaulters remain on government payroll and therefore an incentive to the perpetrators; no clearer mechanisms and commitment between the Ministry of Health and the  Controller and Accountant General's Department to remove names of defaulters from the payroll to give budgetary place to those ready to accept postings to the north. Policy enforcement is virtually non-existent, also largely aided by the 'whom you know' syndrome culture' whereby a defaulter gets reposted to a place of his or her choice or endowed area by merely contacting a power-that-be (R4).

The policy failure is more glaring with respect to posting of Specialist Doctors because of their notion of autonomy of practice and the authorities' lack of policy enforcement commitment.

'Specialist Doctors, because of their level of training and few numbers, tend to dictate where they want to work; unfortunately, the policy makers lack the commitment it takes to compel them to go to where the need for their services exist!' (R4).

Human Resource Practitioners support the above assertion with specific reference to the negative attitude of some regional level Managers contributing to the failure of the posting

and transfer policy. The policy permits the release of health personnel who accepted posting to any of the northern regions and have served for at least three years.

> 'These Managers put impediments in their way asking them to provide a replacing staff for her to be released to relocate in the new region of her choice; on account of fear of such constraints, the one would, in the first place, not go to the north to work' (R11).

Health professionals focus group in Jirapa in UWR also partly blame their regional bosses who have the responsibility for the transfer or posting of staff at the regional level for the inequitable staff distribution challenge at the intra-regional level and by extension, the inter-regional disparities to the detriment of the northern regions in particular

> 'For instance, southern Regional Directors of Health Services would readily accept and post into their region a doctor or other health professional (s) who had refused posting to the north' (FGP17-25).

Health infrastructure policies, according to the Trade Unions, have failed due to poor working conditions in health facilities in the north

> 'Health facilities in the north are not well-resourced and by that, doctors and other health professionals are deterred from going there. UWR, with the 2014 cholera outbreak had to fall on an adjoining district for just water for injection and infusions; a prospective doctor for the north, knowing this situation would feel traumatized and refuse posting' (R4).

Some aspects of the postgraduate training policies have failed. According to interviewees the post-graduate program fee payment at the GCPS has been a financial barrier to Doctors and their facilities in the north. This in turn causes attrition of doctors in the north to the south;

'Locally, the training used to be free but now fee payment has placed a huge financial barrier to doctors and other highly qualified health staff accessing these programs; if their hospitals are unable to sponsor them, then frustration sets in and they look to the southern hospital or the private sector in the south ready to sponsor them. Doctors, by their nature want to 'practice in freedom.' But counter policies like bonding sponsored postgraduate trainee or compelled by the sponsoring hospital to study what it considers its 'priority program', naturally send such a doctor to the southern hospital that meets their program of career interest instead. In addition, even though entrance exam and interview remain entry requirements of the GCPS, some doctors pass the exams but are still not offered admission' (R4).

Non disbursement of funds by the government for policy implementation is one key explanation for failure

Another condition for policy implementation failure is that continuity of implementation of some of these good policies is usually interrupted by way of change of administrators or policy-makers.

**Ways Ghana's HRH policy implementation can impact health inequality reduction**

Participants' narratives on how Ghana's human resource for health (HRH) policy implementation can impact positively on reduction in the neonatal and maternal mortality inequality gap between the north and the south, described the current policy and implementation gaps; the pre-requisites and high impact interventions to achieve practical reduction in the inequality gap; and the effective measures to ensure practical enforcement of the planned high impact interventions.

**Current gaps in Ghana's HRH policy implementation**

The current human resources for health policy and implementation gaps identified were basically summarized as: admissions into health institutions; inadequate production of qualified personnel; perennial problem of inequitable distribution of health personnel; persistent shortage of required qualified personnel in the north; policy actors are not engaging effectively; prevalent protocol ('whom you know' syndrome) culture; lack of feedback and re-strategizing; inappropriate and inadequate infrastructure; absence of conditions of service for doctors; and policies not well disseminated, funded and reviewed.

According to the Legislators, the process of getting the critical qualified health professionals like doctors, midwives and nurses, among others, should begin with the admissions into health training institutions including the medical schools.

> 'Basically, admissions, particularly the Medical Schools, are not on regional quota basis; after which they are compelled to return to serve the region. Government and the institutions that sent them must enforce return to serve the region- bonding and enforcement. Consequently, there is inadequate production of qualified personnel to provide the needed health care services. This is further threatened by the recent government policy decision to cancel payment of health trainee allowance. The allowance, has been a major attraction to school leavers to move into the nursing and midwifery professions in the country; a withdrawal therefore could have considerable negative implications for the numbers going into training and qualified personnel for service delivery' (R2).

The Legislators also cite the perennial problem of inequitable distribution of skilled MCH and other Providers as persistent major gap.

> 'As donors put it, year upon year Health Summits identify and bemoan this situation but government has failed to come up with a concrete implementation plan telling the

how the challenge is being addressed. One major step in this direction is the development of the staffing norms which has been on the drawing board until partially completed recently. There is the need to publicize this policy document, educate everybody on it; and apply it to enforce posting of staff, nevertheless, on incremental basis as there is need to do a study to find out the real reasons preventing people from going to the north to work. Can these reasons be addressed, and how? This entails bringing on board all stakeholders, including the Medical & Dental Council, the Nursing & Midwifery Council, Pharmacy Council, among others. For example, if the medical and dental council has to accredit people for doctors to be in the north, this has to be committed and enforced. The duplication of functions between the Ministry of Health and the Ghana Health Service driven by internal politics and power play has also played a considerable part in creating this undesirable situation.' (R3).

On inequitable staff distribution, the focus groups believed that a major solution is to increase the numbers of Health Training Institutions in the north to produce to meet their local needs;

'There are still not enough health training institutions in the north to train enough and well those being admitted into the schools with the definite contract to serve in those regions, be they only people from the locality or people from the south who choose to. It is unfair for somebody to train in the south only for such a person to be posted to the north to serve or the vice versa' (FGP1-8).

This submission tends to support the policy of regions train and retain and the need for effective bonding system. But, in both ways enforcement is weakened by lack of commitment on the part of the powers that-be

'The enforcement which has been very weak must be addressed for the desired impact; the question is 'what' and the 'how' to achieve this? Establishing more health training institutions in the north also has implications for how resourceful the facilities would be in terms of training equipment and other teaching and learning materials, functionality of the physical facilities, the reliability of the social amenities and the numbers and quality of the tutors' (R8).

The focus groups, particularly those in the Tema Metropolis in GAR introduced a paradox to this persistent shortage of qualified staff, particularly nurses in the northern regions and remote communities in the midst of unemployed skilled MCH and other Providers

'The unemployment of qualified nurses both from the public and private health training schools; these have remained at home for months now and despite the cumbersome employment application processes they are subjected to, Why can't the government employ and post these to the northern regions and other remote areas in the country to fill the gaps and help reduce the health inequality gap? Nevertheless, government should ensure improvement in the conditions of service in these deprived areas for success and sustainability of such a policy' (FGP1-8).

The Trade Unions particularly emphasize lack of effective engagement and consensus building among policy actors as a major HRH policy gap

'Policy actors are not engaging effectively in the policy making processes. The linkage between the policy makers at the National Headquarters and the Regional Health Authorities does not reflect in the policy, likewise between the Regional Health Directorates and the Political leadership or the District Assemblies. The third gap is the mentality of the political leadership and the people who think that health delivery belongs to the health staff and managers which is a serious fallacy. It is most

critical for policy makers to involve all stakeholders for their inputs in the policy development and implementation planning processes for them to understand, own and get involved in the enforcement of the implementation plan. Policy implementation practices are fraught with discrimination on political, ethnic and racial grounds and unfortunately, the oaths sworn by political leadership including avoidance of discrimination are not reflected in the policies developed. Those responsible for allocating health funds are also not being held accountable, tangibly, for health resources not made available for policy implementation' (R4).

The prevalent protocol culture or 'whom you know' syndrome, according to Health Professional focus group in Nadowli is another major policy implementation barrier.

'This culture of 'whom you know' in the Ghanaian day-to-day life, as earlier indicated, has bedeviled health policy development and implementation processes and accounts for the persistent human resource for health mal-distribution; and which in turn accounts considerably for policy failure and the health inequality gap between the three regions in the north and the southern regions' (FGP25-32).

Lack of feedback on gaps identified in the implementation process for, and re-strategizing are critical gaps.

The kind of infrastructure that attracts skilled MCH Providers to the north has been a major HRH policy implementation gap in the considered opinion of the Trade Unions

'Infrastructure should be practically there to attract health workers to go there. Once the infrastructural gap in the north is narrowed, qualified personnel would not have reason to refuse posting to the north because the favorable conditions in the south also pertain there' (R4).

Focus groups in the UWR buttressed the point about the infrastructure in the north

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'Where infrastructural developments spread out equitably to the northern regions, these localities open up radically because of the associated enormous socio-economic and well-being opportunities. For example, the establishment of the Wa campus of the UDS as a single developmental intervention improved transportation, residential and official accommodation, among other commercial activities. This significantly raised the income levels of the people in the locality/ region. The attraction and retention of people from the south like doctors to the region because some of the living conditions in the south can now be found there is another benefit. More buses now even run from Accra to the last town in UWR thus making it possible for southerners working in UWR to visit their families down south for the week ends' (FGP 17-25).

Specifically on health infrastructure, the focus groups stressed on the equipment and transport for CHOs, Midwives and other community health workers;

'The huge gap in the health technology in the northern regions; the fact that we lack some essential diagnostic and imaging equipment and logistics and have to be referring clients and patients to the south, with its attendant negative accessibility implications, means that health delivery in these regions would remain unattractive to these qualified health personnel. Once they are absent, service quality remains compromised with the consequential relatively poor maternal, newborn and other health outcomes. A related aspect of the health infrastructure and equipment gap is the irregular provision of appropriate motorbikes for the CHNs/CHOs in the northern regions and rural communities. This improves their mobility in delivering health care services to the hard-to-reach communities in particular. Coupled with other incentive packages, this intervention would attract qualified staff to stay and work in the northern regions' (FGP25-32).

Absence of conditions of service that cater for the peculiar needs of doctors working in UWR is a major gap and a missed singular opportunity that interviewees identified.  Doctors in the south strongly supported this advocacy

> 'It adequately caters for the peculiar needs of the doctors who go to work in the north; government has failed to put conditions of service in place for doctors in this country' (R9).

Focus groups also shared in the need for the introduction of modified COS for doctors in UWR

> 'There should be flexible COS policies in favor of those in the north; special incentives, in addition to what the southern counterparts benefit, must be practically given to those serving in the north in order to attract adequate numbers of the required cadres there' (FGP40-48).

Policies, once developed are also not regularly reviewed for strategy reformulation to address implementation gaps. This is the assertion of Human Resource Practitioners

> 'Policies are not reviewed by national level for relevance to the changing situations on the ground for reasons of lack of funding; same for the poor dissemination at the national, regional and district levels as national level is unable to print adequate copies. Consequentially, only few copies are availed to the regional level and lack of funds is also cited for inability to organize policy dissemination meetings; the few implementers who have the policies equally fail to implement the policies as required, due to favoritism and nepotism' (R11).

The focus groups have also reiterated the critical need for adequate staff education on HRH policies and regular reviews for successful implementation

'It is important to effectively communicate human resource policies to enable employees understand them and be well guided in the performance of their duties; and the policies must be reviewed regularly and involve the grass roots for their valued inputs for sustainability' (FGP25-32).

**Pre-requisites and high impact interventions to achieve MCH inequality reduction**

In order to help practically address the above policy development and implementation gaps for the desired effect on reducing the MCH inequality gap between the two geographical divides, participants proposed some pre-requisites and high impact interventions.

The focus groups recommended,

'Increased employment rate in the northern regions to reduce poverty and improve their quality of life and access to quality MCH care services and resources' (FGP1-8).

'Increase education level in order that they would be able to plan their families very well. Empower the people in the north, particularly the women, to be able to fend for themselves including choosing good health practices rather than others/husbands being their mouthpieces in decision-making affecting their health and well-being' (FGP9-17).

The Health Professional focus groups in Asante-Akim Central also recommended improved access to CHPS services;

'Increase CHPS facilities in communities in the northern regions, and coupled with training, retaining and motivation of people admitted into the health training schools in the north, improve the communities' accessibility to services of qualified health personnel; they do not have to continue to travel long distances to receive the services or resort to the harmful traditional health practices' (FGP40-48).

They strongly advocate for commitment to the principle of equity in MCH service delivery

> 'Drastic reduction, if not elimination of the bribery and corruption as well as the nepotism and favoritism in the implementation of human resource policies in the country is urgent. For instance, policy makers or leaders must stop diverting donated medical equipment to their private health facilities and ensure even distribution across regions for all facilities to benefit and improve service quality. Similarly, the principle of what is due staff A must not be denied them and given to B, must be adhered to by policy makers in the posting and motivation of health personnel in the country. Such officials and practices must be exposed through investigations and appropriate sanctions including dismissal and demotion of culpable officials' (FGP25-32).

According to the focus groups, ensuring enforcement of human resource policies itself calls for enforcement policies as part of the policy implementation plans themselves. Such policy measures include, but not limited to bonding and applying such sanctions as stated above.

According to the Trade Unions another success pre-requisite is creating a positive image of the north.

> 'One way is to stop the historical negative image propaganda about the northern sector in order not to continue to scare and deter the largely uninformed segment of the southern populations. This can be achieved through a clear health staff and general public sensitization policy or program regarding the true state of the north in terms of peace and stability especially for the people of the southern descent. After all, those from the south who have worked or are still working in the north are living testimonies to the positivity of the north' (R4).

Health Professional focus groups in the Ada East share similar views

Periodic staff survey is a key policy implementation success pre-requisite. It helps test staff awareness and knowledge levels regarding the human resource and related health policies that are supposed to be in place to govern their work. In another sense, the intervention assesses the efficiency and effectiveness of the leadership, policy makers and supervisors themselves in getting these policies well communicated to the understanding and adherence of the staff.

Focus groups also strongly advocated for district/community level evidence-based policy research such as this study, to inform the development of workable and sustainable policies.

'Hold district meetings to obtain the vital inputs of health staff and community members who will be affected and affect the policies to be implemented. Another justification is the need for policy development and implementation processes and practices to take into account certain important socio-cultural values of the populations to be affected by the policies. This way, the peoples' own fears, suspicions and solutions can be factored in, they get inspired and more likely to accept the policies, programmes and services for the desired policy results to be better achieved' (FGP17-25).

Health Managers and administrators similarly emphasized common understanding, consensus and ownership of policies for success

'Thorough stakeholder engagement, right from the grass root level is very important because some people will just go and engage one or two people and at the end of the day they will come out with a report to say there has been stakeholder engagement' (R8).

The policy makers/legislators equally strongly underscored evidence-based research as a pre-condition for policy implementation success and sustainability

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'If studies are done, if workers are consulted, they are on the ground; they would be able to tell us what the issues are; they would come out with suggestions. Similarly, the research can always evaluate the implementation to see the loopholes then you can actually fill in the gaps. The cost is more than the money that you are spending in doing the implementation, if nothing is done (research) and out of the blues we work with a policy that is based on somebody's whims and caprices in the name of 'we are wasting money' (R2).

Using the staffing norms as the scientific basis to drive equitable human resource distribution and help reduce the MCH inequality gap, the legislators further contended that the success of the policy implementation would depend on good research

'First is to clearly defining the problem; secondly, being courageous in identifying what aspects to tackle. In this case, the third condition is that the budget and the recruitment authority must be decentralized to the regions or facilities where the need for the required human resource exist, to advertise that there are a number of vacancies for nurses; and people who are in Accra here with no jobs may be incentivized to come there. Fourthly, for their retention and motivation in that deprived area, ensure some capacity building is done; and of course, deploy technology to ensure that they have equipment and medicines or health commodities to work with that would help them deliver good care' (R3).

This assertion was also shared by the health managers and administrators

'Special incentives are a *sine qua non* to achieving posting and retention of qualified health personnel in the northern regions. For example, they should be made aware of the number of years to serve there and come back (down south), they should not be forgotten; for two or three years' work there, you give them the chance to further their

education. But alongside, the government should see to the amenities, that is, the roads, the schools, electricity, accommodation, water and sanitation; those things must be improved' (R6).

The Medical Practitioners share the perspective on improving working conditions in the north

'Indeed, the working conditions in the north if we can replicate what is here (south) or make them similar to be attractive enough for other people to get work satisfaction, not only from money, but even equipment and other supporting staff to help. For instance, a Specialist posted to a facility in the north and there is no Nurse Anaesthetist, the person will struggle' (R9).

Another illustration of failure to clearly define the problem to be addressed is the promotion policy. According to the Trade Unions there are inconsistencies.

'Whereas, in the past there was promotion along both non-academic and the academic grades so you chose the side you want to go; now virtually, promotion policy is based on academia or academics; so, everybody wants to go to school. And, if I am in the north and the schools are not there, I would come to the south to go to school. Such policies need to be redefined if the MCH inequality gap would be reduced' (R4).

In all these, however, it takes 'bold leadership at all levels..', to formulate and successfully implement good, evidence-based policies that can bridge the MCH inequality gap existing between the north and south; bold political leaders at central and local government level; the public and private sectors, civil society organizations or NGOs and traditional levels

'Bold leaders who enable all to do accountability at all levels, not necessarily cash accountability but policy accountability, demanding results in all aspects; then making sure that everything that is sent there (north) is properly accounted for and put to good use' (R4).

Additionally, after the appropriate evidence-based human resource policies have been developed, there should be effective implementation Monitoring mechanisms in place for success. This assertion was held by Health Professional focus group in the Nadowli District

> 'Committees in place in each region, which will monitor the policy implementation processes, their workability and give feedback to all staff, district, regional and national levels; and to the Health Managers and Administrators, there is the fundamental need to define the 'indicators for measuring health inequalities in terms of human resource policies…and whether we are achieving those indicators or not' (FGP25-32).

Policy makers interviewed corroborated the call for regular policy implementation Monitoring

> 'Monitoring visits to regions and districts from national level; through these visits, regions, districts and facilities would be encouraged to use meetings and internally generated funds to adequately orientate all staff on the policies and the required implementation practices. This action is a follow up to the earlier effective policy dissemination done by the national level through mobilization of funds for printing adequate copies for regions. And direct electronic circulation to individual staff for a fee, where funding becomes a limitation for effective policy dissemination' (R11).

Policies, according to the policy maker, must thus be reviewed regularly

> 'Policies must be reviewed after every five implementation years to ensure their continuing relevance to the changing needs on the ground. To achieve this, budgeted funds must be mobilized and utilized for the intended purpose' (R11)

The policy makers submitted that the development of good and appropriate policies and their successful implementation would thrive on two primary pre-conditions.

'First, all levels of governance and all health stakeholders accepting that health is the number one priority developmental area. Second, and most importantly, the practical commitment in allocating the necessary resources it deserves as the number one priority sector; and commitment of various governments. If studies have shown that there are wide disparities, why are those disparities not gradually being closed, and in some cases the indicators even getting worse; why are we not tackling the cause? So government makes budgetary allocations, those budgets should be followed to the letter to ensure that implementation is done….then the desirable impact is being felt' (R1).

The focus groups also observed the down play of the power of the media to promote equitable distribution of human resources, improved service uptake and acceptability, particularly in the north and rural communities. Here, some socio-cultural values and geographical inaccessibility have significant negative effect on health delivery and better health outcomes. They accordingly call on the government to give this high impact intervention its deserved high priority attention.

'We need more adverts on household and community level appropriate maternal and child health emergency interventions, using both orthodox and traditional approaches, rather than the hyped adverts on politics and alcoholic beverages particularly in the electronic and print media. Health Authorities should showcase positive side of health professionals' work. Health Workers do far more good things to clients and patients than the few bad things but the latter are usually carried publicly. The practice dampens staff's morale and negatively affects their performance. Building a positive image of health professionals would also significantly inspire them to lend more support to the policy implementation processes' (FGP40-48).

**Effective measures to ensure practical enforcement of planned high impact interventions**

The lack Policy enforcement attitudes and practices dominated participants' explanations for policy implementation failures in the country. As such, achieving enforcement of the above policy implementation pre-conditions, in turn requires clear and proactive enforcement measures to be built into the policy implementation plan (s).

To the politician or legislator/policy-maker, achieving this is purely an issue of governmental or political will power

> 'It is the government that controls every resource of the nation. Hence, if government decided that she wants to see health moving forward and allocates the resources for implementing health delivery; and comes out with a very strong, clear and well understood policy definitely parliament and everybody would support it. For instance, we cannot talk about achieving universal health coverage without government employing every available means, beyond the National Health Insurance Fund, to ensure that staff attraction incentives and technology deployment policy implementation is duly resourced to have many more people access health care' (R2).

Getting bold leaders at all the levels and, more importantly, governments to be practically committed to prioritizing and funding successful implementation of the strong and very clear health policies means applying the rule of law

> 'We go by such rules appointing people into round holes instead of the other way round. Regardless wherever you come from in this country, once you qualify through an interview or election, you can work anywhere in the country including the north. We must begin to imbibe this mentality and attitude in the young ones to accept every person as a Ghanaian and look at the quality that can be brought on board for

enforcement of policies and laws to work in the country. It also means sanctioning or rewarding such people through the same medium of appointment or election because that person or groups of persons has been honored, trained, incentivized or resourced with the tax payer's money. For example, in the case of first appointment or subsequent contract renewal for senior Health Managers or leaders, as the Director General says, you may be removed from the job position or rewarded for meeting the agreed defined performance indicators or targets' (R4).

To begin with however, Health Administrators called for a national forum on stakeholder policy education and consensus building on the human resource challenges in the north and the policy implementation pre-conditions for success, organized by central level. This intervention must be cascaded to the local government and community levels.

'It means getting everybody involved; and ensuring that people understand them; and if well understood then, it would be implemented well. Critical research findings on health inequalities relating to human resource policies such as yours (this is the first time somebody is interviewing me to look at inequalities in terms of human resource policies), give us informed decision, evidence base; and so, dissemination of your findings is very important. We also have to look at the authorities that be, as to how these ones can be factored into the human resource policies. The proposed stakeholder education and consensus building forums at the national and lower levels would be most appropriate for such research dissemination and way forward planning' (R7).

The structures and institutions that would facilitate the enforcement of these pre-conditions must be born from and be incentivized by the same core values of going by the rules of appointment or electing the right persons into the right round holes and each one's role serving as a 'check and balancing' on the other (s).

In summary, the results matrix suggests that multiple causal factors (social determinants of health and health inequality) interplay to influence reduction in maternal and neonatal or child health inequalities in Ghana. Specifically, in the context of Ghana, the study findings suggest that reduction in maternal and neonatal mortality inequalities between the UWR and the AR and GAR could more significantly be influenced by geographical accessibility of quality, high-impact life course MCH services than mother's educational, income and occupational statuses.

The findings further indicate that in the context of Ghana, Universal Health Care as SDG target is attainable with more emphasis on PHC approach to evening up geographical accessibility to skilled MCH Provider services in UWR faster than the AR and GAR. This could lead to faster progress in the utilization of close-to-client high-impact life course MCH services by skilled MCH Providers in UWR. They include modern contraceptives/family planning, immunizations, focused antenatal care, skilled assistance deliveries, newborn care and infant feeding and child welfare clinics. Thus, MCH coverage and outcome inequalities between UWR and the AR and GAR could reduce (Bawah et al, 2017; Victora and colleagues, 2017; Olorunsaiye, 2015; Bhutta et al, 2009) over time.

**CHAPTER SIX: DISCUSSION OF WAYS THAT COULD REDUCE MATERNAL AND NEONATAL MORTALITY INEQUALITIES IN NORTH AND SOUTH OF GHANA**

**Introduction**

The matrix of evidence from the qualitative and quantitative data in this study provides some cues to plausible options that, in the context of Ghana's PHC approach to high impact life course MCH service provision by skilled providers, could reduce maternal and neonatal mortality inequality. The data specifically suggest indicative reduction in maternal and neonatal mortality inequality gaps between the Upper West Region in the north, and the Ashanti Region (AR) and Greater Accra Region (GAR) in the south respectively. The trend concurred with faster progress in net improvement margin of 50% in doctor density in UWR between 2012 and 2014 than 9% and 19% in the AR and GAR respectively. At the same time, utilization of quality MCH services of available midwives by deprived and rural communities in UWR was also far more than pertained in the AR and GAR that perennially attract and retain gross disproportionate share of these cadres (GSS, GHS, ICF International 2015). For example, net improvement margin in skilled assistance deliveries between 2003 and 2014 was even wider in UWR (91%) than AR (43%) and GAR (13%). Alam (2015) in a study of maternal mortality rate (MMR) inequality trend in relation to utilization of modern contraceptives (MC), antenatal care (ANC) and facility-based deliveries by skilled assistance in seven African countries found reduction in MMR inequality in those countries with faster utilization progress among the poor and deprived areas.

This chapter discusses these plausible options for Ghana grounded in relevant evidence-base or literature on MCH coverage and outcome inequality studies especially in LMICs. Thus, the chapter aims to adduce more evidence to further support the thesis, draw appropriate conclusions or evidence for informed policy recommendations and further research areas.

**Ethnicity**

The study showed that 0.9% and 2% of UWR indigenes found in AR and GAR but no *Akan* in UWR. The results tend to support the unattractiveness of the UWR and high migration rate (8%) of its population to the affluent southern regions of the country with low remittances from the migrants back home (Ackah and Medvedev 2010). The high migration rate tends to suppress health and economic activities in the region. Skilled MCH and other health and related professionals thus refuse to locate their practice in UWR and sister regions in the north (Zere et al 2012). For decades, District hospitals in UWR had lone doctor situation and either none or lone Specialist at the secondary referral level. District, Regional and Teaching hospitals in AR and GAR, conversely had gross disproportions of general doctors, specialists and midwives due to the concentration of the training centres in these regions to the exclusion of UWR. For example, 1087 of the 1247 (87.2%) general physicians in 1997 worked in the urban regions though 66% of the population lives in rural areas (WHO 1997; Ghana Health Service 1997).

Pregnant women, especially teenagers, newborns and children are at the highest risk of preventable morbidity and mortality in UWR especially maternal and child emergencies due to long referral distances to access specialists' services in endowed regions. These vulnerable groups in UWR's deprived and inaccessible communities are worst-off. The region perennially thus has the least coverage of quality MCH services by skilled Providers with corresponding highest neonatal and maternal mortalities (Kojo and colleagues 2018; Alam et al 2015; Zere et al 2012; Bawah et al 2017; Olorunsaiye 2015). High migration also contributes to the region being the poorest (Osei-Assibey 2014; GSS, GHS and ICF International 2015). The high poverty levels also increase the population's susceptibility to natural disaster and diseases with poorer health outcomes (Marmot 2005).

**Location (place and space effect)**

Only 6.5% of the population in UWR is located in easy to reach areas compared to 85% and 7.7% in GAR and AR respectively. This has implications for access of the affected populations to quality health care services particularly doctors and midwives predominantly located at the district hospitals, the primary level referral facility. In the case of the midwives, the health centres located within their respective sub-district capitals and also often challenged with very limited or no public/community transport system. Indeed, 5 in 10 (50%) women encounter one problem or the other accessing health care for themselves; and distance is the major factor for one quarter of women (GSS, GHS & ICF International 2015; Mutangadura et al 2007; Olorunsaiye 2015; Bawah et al 2017). It also supports the assertion that geography affects health negatively or positively depending on one's location and their exposure to health risk (air pollution etc.) or health-protective (health clinics or providers) factors within its space and place (Arcaya et al 2015).

**Average respondent household size**

The rage of household size from 1-2 to 16+ means an average household size of 8.5. The results point to the high fertility rate in Africa including Ghana (4.2) and the declining mortality rate giving rise to a proportionately young population and a generally increasing population dependent upon finite natural resources (UN 1987). The data further support the low family planning service coverage in Ghana of only 27% and the high youth unemployment rate (GSS, GHS and ICF International 2015; Osei-Assibey 2014).

The high dependent population also presents child, adolescent and maternal health as well as economic challenges. These include high unemployment among the youth, high teenage pregnancies, and unsafe abortions, maternal and neonatal deaths as well as HIV and other sexually transmitted diseases among these vulnerable groups (GSS, GHS & ICF 2018).

The situation thus further justifies the urgent need for increased geographical accessibility and coverage of essential life course MCH and adolescent services for these vulnerable population groups. This means removing physical barriers to uptake of services including presence and services of skilled staff numbers and mix required in clients' communities and homes as well as access to appropriate health messages.

**Women's Participation in household decisions on purchases**

Only 17.7% of respondents in UWR to high of 19.5% and 62.8% in AR and GAR respectively, who participate in decision-making affecting household purchases including health, hold significant implications for empowerment, health care accessibility, utilization and outcomes, particularly MCH.  It means far more women in the southern regions of Ghana, that is, more than 6 in 10 are most likely to be able to influence decisions about their health and wellbeing needs and that of their children, than women in the UWR. The Ghana Demographic and Health Surveys support this assertion. For instance, the 2014 Ghana Demographic and Health Survey conducted by the Ghana Statistical Service (GSS) and the Ghana Health Service (GHS) which indicated that overall, 34% of the households surveyed are headed by women and 66% by men; and 6 in 10 married women participate in decisions relating to visiting family, their own health care and major household purchases though only a third of married women in the northern region do (GSS, GHS and ICF International 2015). Indeed, in most northern cultures and religions, a woman cannot access family planning services unless permitted by the husband. She must also deliver her first born at home as a mark of fidelity to the husband regardless the high risk of complications for mother and baby being delivered by unskilled provider (Alam 2015). The implications are likelihood of high community maternal deaths that go unreported. According to JLI (2004); Alam et al (2015); Gupta et al (2011); Olorunsaiye (2015); Victora and colleagues (2017) and Gwatkin (2017) maternal mortality responded best to the increased presence of skilled providers.

**Income inequality**

The statistical significance in regional variation in income earners and non-income earners in table 5.2 (annex) indicates significant income inequality between the UWR and the southern regions of Ghana. Other economic indicators used in the study such as ownership of household assets as a proxy measure of wealth further indicate that far more households in the UWR are most likely to be within the lowest and second bottom wealth quintiles of Ghana compared with the GAR and AR. For example, only 20 car-owning and 269 non car-owning households in the UWR compared with 80 car-owning and 262 non-car owning households in AR; and 820 car-owning and 80 non-car owning households in GAR, with the chi-square of 71.187 and a p-value of 0.000. Significant variations shown in table 5.2 (annex) in areas of access to safe toilet facilities, safe drinking water and formal educational level attained; as well as the number of household members with health insurance cover, further support the income or wealth inequalities between the two geographical divides.

The 2014 GDHS indicated that whereas GAR is the richest region with as high as 52% of its population in the highest wealth quintile, only 2% are within this quintile in the Northern and Upper East regions; conversely, more than 7 in 10 in the Northern and Upper East regions (72% and 79% respectively) and 6 in 10 (60%) in the UWR are in the lowest wealth quintile (GSS, GHS and ICF International 2015).

The income inequality against the background of few geographically dispersed MCH facilities and lack of community transport particularly in the deprived and rural settings of regions in the north limits access to quality health care. In other words, close-to-client community-based health facilities and deployed motivated skilled MCH providers could enhance service accessibility, utilization and MCH outcomes (Olorunsaiye 2015; JLI 2004; Zere et al 2012; Bawah et al 2017; Gupta et al 2011).

MCH care forms a critical component of life course health development that, arguably, could best explain maternal and neonatal mortality inequality reduction over time (Russ et al 2014; Steinbach 2016; Adua et al 2017; JLI 2004). In the case of Ghana therefore, with the free maternity and child services as well as the health insurance and the low empowerment of women in regions in the north, community-based and home-based life course health delivery could reduce MCH inequalities more than income, and wealth. This assertion is supported by the adoption of the universal health coverage (UHC) approach to SDG attainment by Ghana and sister African countries (United Nations General Assembly 2012; Alam et al 2015). The focus of Ghana's UHC is on contextual MCH, early child development, adolescent, adult health services and related resource provision. Sustainable political commitment and appropriate investment into these life course high-impact MCH interventions and policies in areas of need are pre-conditions for attainment of UHC. This could then reduce its high fertility rate, morbidity and mortality, promote well-being and increase life expectancy over time. Alam et al (2015) argue that there is increased fiscal capacity in most developing countries. Thus, with political commitment and focused, effective policies in place, UHC attainment is feasible.

On the contrary, inadequate political commitment to investment and attraction of skilled MCH and related health-promoting professionals to UWR has left it under-developed, impoverished and unattractive with the worst maternal and child health coverage and outcome. Indeed, WHO (2016); Gwatkin (2017) and Manzi et al (2012) found that though African countries need 2.8million additional qualified health workforce for UHC to be attainable, governments lack the fiscal capacity to recruit and retain them. As indicated in chapter five of this thesis, whilst UWR and sister regions in the north continue to yearn for doctors, midwives and nurses, large numbers of same cadres remain unemployed. Zere et al

(2012) also asserted that it would take accelerated investment in skilled MCH Providers for Ghana's MDG 4 and 5 to be attainable.

**Educational Attainment**

The UWR statistically is worse off in educational attainment compared with the southern regions of AR and GAR. This historical antecedent is largely explained by the fact that right from the colonial regime, education, health care and other developmental investments started very late in the regions in the north (Osei-Assibey 2014; Songsore 2011).

Level of mother's educational attainment has frequently been associated with social inequality in MCH. Quansah et al (2016) in an MCH research in Ghana concluded that children whose mothers are educated have better child health outcomes than children whose mothers are without education. The 2014 GDHS also found wide regional variations in the levels of education with the Northern, UWR and Upper East regions, for instance, having the highest of males without education in the proportions of 44%, 41% and 32% respectively; with a similar pattern among the females (GSS, GHS and ICF International 2015). According to the GDHS, as high as 26% of female household populations in Ghana are without education; and the corresponding rural and urban split is again a gross disproportion of 35% to 18% respectively.

This means again that women in the UWR are most likely to be worse of in terms of the benefits of education as a contributing social determinant of health. For example, GSS, GHS and ICF International (2015) affirmed that fertility rate was more than three times higher among women without education and who also have the least family planning coverage with the highest proportion in the northern region.

In this study however, it is argued that improved literacy, health education and counseling on life course basis and according to the contextual needs of clients at every life stage could still

promote equal health and well-being and reduce social inequality in MCH. The emphasis of literacy in this sense is not on formal educational attainment or client's ability to read or write English, but rather their local language (s). It is also about universal access of all parents, and mothers in particular, children and adolescents, and adults to appropriate health messages and counseling according to their needs.

Further, the intervention effectiveness would also largely depend on how close or accessible the skilled community-based or home-based health providers are to their clients. In other words, geographical or physical barriers must be removed through necessary attraction, deployment and retention of these providers (JLI 2004; Zere et al 2012; Olorunsaiye 2015; Bawa et al 2017; Kojo and colleagues 2018). Providers by their training and competencies must also primarily identify themselves with the communities or clients they serve. This enhances acceptance and chances of client readiness to receive necessary health messages, counseling and other life course services. The retention interventions, including community acceptance, appropriate incentive package (financial and non-financial) and supportive supervision would assure service availability, accessibility and quality provider-client time. For example, in Ghana, MCH service coverage and quality in CHPS zones can be affected by Community Health Officer's absenteeism and failure to undertake daily or weekly home visits, immunization, outreach or child welfare clinic and family planning services.

Even with the physical presence of a skilled provider in the community, clients might still not be able to access such life course MCH services if the provider introduces their own unauthorized service fee. Health professional focus group in this study disclosed that unauthorized monies may be collected from clients to compensate for unpaid travel and transport expenses incurred for monthly service reports submission at the District Health Directorate. Another reason is to compensate for work overload in that deprived or remote community where other providers have refused to come and work yet they receive the same

government salary level with them. Or compensate for their urban and peri-urban counterparts several opportunities to earn additional income, enjoy other social amenities.

On the other hand, motivation and retention of skilled staff in remote communities for UHC tend to improve with regular supportive supervision from the sub-district, district and regional supervisors. Apart from the opportunity to build their capacity on continuing basis through guidance, encouragement, coaching and reassurance that their services are on track, they have also expressed high sense of satisfaction that after all they are not forgotten. They also get to be updated on current service delivery policies and protocols, quality improvement projects as well as discussing and finding amenable solutions to their challenges. For example, these providers are identified and offered study leave awards, performance and recognition awards. Their facilities can also be declared centers of excellence to serve as study sites for others. Thus geographical accessibility to skilled MCH Providers could more likely than formal education, income and occupational status of mothers in communities impact cultural and financial barriers to life course quality MCH service uptake. Service coverage and quality can thus be scaled up universally and equally to both those with and those without formal educational attainment. For example, the evidence is emphatic that geographical areas with 100% skilled birth assistance (S)BA coverage, as in Thailand, have no gaps whether by maternal education or by socio-economic status (Kongsri et al 2011; Neal et al 2015).  Thus in Thailand, universal coverage of Maternal and Child Health services resulted in rapid reduction in the rich-poor gap of child mortality between the 1990 and 2000 censuses (Vapattanawong et al 2007.)

**Community durbars, radio, mobile phones and television in MCH**

Another dimension of geographical access of respondents to essential health information, education and counseling as well as general and emergency MCH services is the active interaction with, and involvement of mothers and the community at large. This is achieved

through, besides regular home visits, use of regular and frequent community health durbars. These are then supplemented by radio, mobile phones, television, and newspaper or magazine depending on their availability and appropriateness to the context. For example, access to family planning services through community durbars, the mass media; or mobile phones facilitating safe child birth through contact between a pregnant woman at labor onset and the skilled birth attendant like a doctor or midwife (GSS, GHS and ICF International 2015; Zere et al 2012). Access to and utilization of family planning services reduce maternal deaths by up to 50% (Marie Stopes 2016; Staveteg 2016) and, by implication could narrow MCH outcome inequality between resource-poor mothers, communities or population and their well-endowed counterparts.

Health providers must also sometimes appropriately combine use of the above methods, depending on the context, to achieve full effect. For example, in this study no statistical significance was found in regional variation in health workers specifically asking survey respondents to contact them via phone call at labor onset or seek health counseling or advice. The 2014 GDHS report also indicates similar very high proportion of census respondents individually owning mobile phones with relatively very low use for purposes of accessing health services (GSS, GHS and ICF International 2015).

On the other hand, vast majority of the household respondents are regular and frequent viewers of television; and all are radio listeners (especially equity for those poor and in remote locations who cannot afford television set). This means generally, there are good chances for the average Ghanaian to receive health education messages through one or more of the media though such chances are still less likely for the household populations in the UWR (table 5.2-annex; GSS, GHS and ICF International 2015). Health messages through radio can also be equitable in the current Ghanaian context in that in all its ten regions, local radio stations operate to educate, inform and entertain the population in local language(s) on

24-hour basis. In the well-endowed regions, radio stations and activities proliferate. Most districts, particularly in these endowed regions in turn have their own local radio stations presenting health and other programmes in both local and English languages. Equity in quality MCH services coverage and reduction in MCH outcomes could then be achieved through evening up services and resources across geographical areas and among vulnerable population groups according to need (Olorunsaiye 2015).

Another reason for the need to combine health education methods is the fact that Ghanaian print media materials are often in English, likewise most television programmes. Moreover, it is often said that if you want to hide something from the Ghanaian or African, put it in a book due to lack of reading culture on the part of the average Ghanaian. Thus, equality of opportunity to access and utilize quality MCH services and resources is again unlikely for the disadvantaged mothers and children in the north. As part of Government's policy interventions, parents, schools and other institutions (public and private) are being sensitized to create the enabling environment home and outside home for inculcating reading habits into their children.

Indeed, good parenting is part of life course health development intervention that improves early life chances (PHE 2014; Adua et al 2017). It has been also been associated with the child's education, health and social position at the adult stage (Steinbach, 2016 PHE 2014; Quansah et al 2016).

Thus, the geographical presence of the skilled MCH providers in the community could potentially induce positive health seeking behavior. This can be achieved through good rapport, client support networking, common understanding of mother and child health needs in context, and dispelling client fears about MCH and related services. Also, clients must be well educated and counseled on the profound life-long benefits of evidence-based life course

MCH and related interventions for mother and child and the adolescent in particular. An example is the transmission of healthy cognitive genes from the healthy mother to child through nutrition (breastfeeding) and the healthy placenta (Russ et al 2014) already prepared for the conception through earlier reproductive and adolescent sexual health care services. Healthy babies born under such favorable early life circumstances are also shown by life course health development studies to have better future health status, high educational attainment and social position and life expectancy (Russ et al 2014; Steinbach 2016; PHE 2014; Adua et al 2017). For example, infant mortality rates were discovered to be directly dependent on the health of the mother, only falling when the vitality of women in Child bearing age improved (Smith and Kuh 2001; JLI 2004; Russ et al 2014).

**Access to Transport for MCH Services**

Availability of transport enhances geographical accessibility to quality health care services especially in the rural and hard-to-reach locations. The Community Health Officer and other skilled community-based, sub-district and district hospital service providers need motorbikes and vehicle (where available) to reach their MCH clients with the required life course services in their homes and outreach points. In relation to labor onset, maternal and general health care emergencies, access to at least appropriate community transport becomes even more critical to save lives and promote health (Ministry of Health-Ghana 2017; Olorunsaiye 2015; Bawa et al 2017).

**Water and sanitation resources for MCH**

Most of the communicable diseases confronting developing countries in particular are water and sanitation born. Ghana is no exception with malaria, diarrhea, upper respiratory infections, and cholera, among others forming the top ten causes of morbidity and mortality annually (Ghana Health Workforce Observatory 2010).

Safe water and sanitation resources and services are essential health improvement interventions and therefore must be integrated synergistically for quality life course MCH services delivery and outcome distribution across social groups and geographical areas. For example, while other sectors have the core mandate to produce and distribute safe water and sanitation resources across communities in Ghana, health service providers provide health education, counseling and information on personal and environmental hygiene to mothers and children. This is achieved through antenatal care clinics, home visits, child welfare clinics, outreach clinics and community durbars. Children and adolescents are also reached with these essential services through school health services, pregnancy schools and adolescent clubs or youth corners.

For instance, WASH campaign program activities are jointly conducted by health service providers, UNICEF and the Works and Housing and Water resources and Local Government Ministries. Hand washing techniques are thus taught by skilled infection prevention and control staff. Health workers by the Ghana Health Service's IPC policy guidelines and protocols, receive mandatory IPC training. Further, IPC is a high priority area in health facilities' Quality Improvement project initiatives and attracts funding and partnerships from partners including USAID Systems for Health, UBORA and UNICEF etc.

It is also the policy of the health sector to resource all health facilities across geographical locations with uninterrupted clean or safe running water, safe sanitary facilities for the provision of quality MCH services and outcome. For example, preventable infections constitute a major cause of newborn deaths in Ghana and other African countries (UNICEF-Ghana 2014).

**Housing conditions**

Studies cite housing conditions of a population as significant social determinant of health (Buck and Maguire 2015; WHO-CSDH 2008). In this study, respondent households' dwelling floor and roof finishing materials were assessed as a socio-economic variable. Generally, respondents' housing conditions appeared good (floor and roof finish) for nearly 9 in 10. However, in relation to the average household size of 8.5 and the average number of rooms used for sleeping, a significant number of households would experience some overcrowding with its attendant ventilation-related health problems (Marmot 2005; Bartley 2004, 2007). As already discussed, communicable diseases form the bulk of Ghana's disease burden. This means the affected households are at higher risks of infections than those in less crowded rooms for sleeping.

Community-based health professionals educate and inform mothers on the health risk implications of overcrowding and poor ventilation rooms for newborns in particular because they are most susceptible to risk of infection. Life course health development approach to health inequality reduction promotes health practice and policy that go beyond avoidance of disease to the promotion of positive health at all stages of life (Steinbach 2016; Russ et al 2014; Institute of Medicine 2004; Davey Smith, Ben-Shlomo & Lynch 2002).

**Access to energy supply for MCH**

Regular and reliable electricity supply for general lighting and powering medical technology and general plant, machinery and equipment play a critical role to determine the quality of MCH service and overall quality of life especially in rural and deprived communities. Uninterrupted energy supply to community-based health planning and services (CHPS) facilities, health centres and hospitals assures vaccines and life-saving health commodities potency. Maternal and child immunization services are proven life course health-promoting

intervention in Ghana and other low-income and middle-income countries (Gakidou and King 2002; Olorunsaiye 2015; Mutangadura et al 2007). It is also shown to be more pro-poor equitable intervention (Mutangadura et al 2007). This implies that higher accumulated health gain within the lower quintiles over time could narrow the MCH inequality between the rich and poor or UWR and the AR and GAR.  This assertion is supported by health service coverage studies that found that reproductive, newborn, maternal and child health (RNMCH) inequality is reducing over the past 20years due to faster progress among poor and deprived populations (Cesar Victoria and colleagues 2017; Mutangadura et al 2007; Gwatkin 2017).

Rural electrification in particular has therefore been a major social amenity influencing rural-urban migration dynamics in Ghana and other developing countries (NDPC-Ghana 2015). Apart from the vaccine and other commodity security, availability or absence of reliable energy supply and related amenities largely influence health professionals' attraction, motivation and retention in most CHPS zones in the three regions in the north. They need to recharge their mobile phones, listen to radio and, where applicable, view television news and entertainment. They also frequently depend on the health centre in the sub-district or sometimes the district capital for their vaccine supply with its attendant inconveniences, costs and interruption in service delivery. Community Health Officers in such facilities therefore commonly vacate their stations for the district or regional capitals particularly during weekends to enjoy such amenities. 24-hourly RMNCH service provision is thus interrupted with missed opportunities.

For example, table 5.2 (annex) shows the presence of the *Dagaaba/Wala* ethnic group in both AR and GAR but no *Akan* in the UWR among the respondent households. Coupled with the statistical significance in the regional variations in the distribution of these social amenities, the UWR has been unattractive to skilled MCH and other health professionals from the southern sector. This is particularly so for those who were trained in the southern medical

schools and other health training institutions. Ghana and other African and low-income countries have introduced some medical education reforms aimed at promoting the training and retention of doctors, nurses and midwives to work in their training localities. For example, the establishment of nursing and midwifery training schools in all ten regions of Ghana, coupled with its train and retain policy has over the years narrowed the midwife and nurse density gap between the UWR and GAR and AR. Further, the presence of the Ghana College of Surgeons and Physicians has not only helped to drastically reduce external brain due to post-graduate training abroad, but currently increasing the numbers and geographical presence of post-graduate Obstetrician Gynecologists and also Family Health Physician Specialists.

At the national level implementation of the district hospital residency policy for residents of the College as a way of extending their MCH services to the deprived and rural areas remains a challenge. This arguably is attributable to the location of the facility in Accra the national capital with all its omnibus attractions to these skilled health professionals. Practical decentralization of training centers, admission criteria in favor of deprived area's serving officers, alongside improved social amenities can scale up skilled MCH service provision in deprived regions.

**Access to Quality Health Care**

Health care services in this study refer to the full range of population-based life course public health or preventive and health-promoting services and the individualized clinical or institutional care and rehabilitation services. These are required for assuring both individuals and population health and general socio-economic well-being.

The study thus conceptualizes MCH and related health care services as life-course favorable circumstances an individual or a population experiences at the various stages of life.

Specifically, the focus is on pre-conception through conception, birth and post-delivery to early years of child and adolescent health development.

Studies have associated maternal, neonatal and child mortality inequalities with the presence of these life course circumstances and the health care systems in place to manage them, and other social determinants of health (Russ et al 2014; Gwatkin 2017; Gupta et al 2011; WHO-CSDH 2008; Steinbach 2016; Victora and colleagues 2017).

Thus, access to the right mix of essential health care services at every stage of life pathway plausibly has an overriding influence on a person's health and welfare compared with that of other socio-economic determinants of health. Access to and utilization of quality health care services already outlined comes, in turn, with an assured fair availability of the required right numbers, mix and quality of HRH at the right places and the right time. The extent to which this precondition is met, would thus determine the extent of equal distribution of health or health outcome of individuals and populations living everywhere within a given defined geographical area or nation.

The services of doctors and midwives transcend this range of essential health services that are expected to be delivered as an integrated package particularly at the primary level being the district (includes the district hospital), sub-district (includes the health center) and the community level (includes skilled deliveries at CHPS compounds and domiciliary). In particular, maternal and child health outcomes are major proxy measures of health status and national development (Marmot 2005; Gupta et al 2011). In addition, inequalities in health are more pronounced in maternal and newborn health outcomes; just as the huge inequities in human resources for health (HRH) distribution in Ghana are more pronounced among doctors and midwives over the years (Zere et al 2012). Doctors and midwives were therefore selected in this study as proxy HRH cadres and their services as proxies of health care access which,

arguably, have plausible stronger association with MCH outcomes inequality (Dovlo, 2007; Zere et al 2012; Gupta et al 2011; JLI 2004; Bunker et al 1995) than the other social determinants of health.

**Health insurance for households**

Ghana has instituted a national health insurance system (for over 95% of health conditions) through legislation as a key policy intervention to achieve universal health coverage (Apoya & Marriot 2011; Ministry of Health-Ghana 2004) and reduce inequalities in health especially maternal and child mortalities. The benefits also cover free maternal deliveries and exemptions for the poorest and most vulnerable, at the point of use, as part of measures to scale up health insurance coverage and reduce health inequalities (Help Age International 2008; Ministry of Health-Ghana 2015). It also aims to reduce the long stagnation in neonatal deaths between 1990 and 2014 (Ministry of Health-Ghana 2015). There are significant practical implementation challenges but the discussion of this is outside the scope of this study.

In this study, health insurance coverage for households is low given the average household size of 8.5 members and only less than 1 in 10 (5.7%) households have between eight and ten members covered. Further, the statistical significance in the regional variations implies that households in the UWR would be worse off in this respect.

The data contradict the 2014 GDHS findings of an average household size of 3.5 implying by this study data that at least 46% of households have all their usual members covered by health insurance (GSS, GHS & ICF International 2015).

There is however no contradiction between the primary survey findings and the qualitative findings from the interviewees and the health professional and client focus groups in this study as presented in chapter five.

Moreover, the study focus is on equality of access to evidence-based life course maternal and child health care (MCH) interventions in Ghana that have been shown to reduce MCH outcome inequality in low-income and middle-income countries (Russ et al, 2014, Victora and colleagues 2017; Gwatkin 2017; Alam et al 2015; Olorunsaiye 2015). These services as outlined above are however fully covered by health insurance at the point of use (Apoya & Marriot 2011; Ministry of Health-Ghana 2004; Agyeman et al 2014). This also means MCH clients do not directly pay insurance premium to have health care cover.

The study thus argues that holding financial or income, mother's education and occupation as confounding factors, equal geographical access to these evidence-based life course MCH interventions could best explain MCH outcome inequalities in Ghana. These other social determinants of MCH outcome inequalities thus contribute relatively less (Bunker et al 1995) in explaining MCH outcome inequalities in the Ghanaian and other LMICs' contexts. This is because in the Ghanaian context of 50% or more of its population living in rural, hard-to-reach and deprived locations, particularly the three regions in the north, there are more geographical barriers to access and utilization of these services and resources. These barriers include but not limited to lack of skilled health providers in these locations to provide universal access; long patient/client waiting time as a result of few skilled staff; long travel distances separating home from the nearest health facility of skilled health provider due to widely dispersed settlements. The rest are the lack of private and community transport services; the few health facilities in such locations and the cultural and religious barriers to accessing and utilizing these services in the north. A related dimension is the poor infrastructural state of even the few health facilities in the north including physical, equipment and amenities discussed above.

The argument is supported by various health inequality studies that assert that health care coverage inequalities are not reducing in LMICs due to health care access and poor-quality

considerations (Alam et al 2015, Ross 2015). For example, Alam et al (2015) found that out of the six African study countries, those which have made sufficient progress towards maternal death reduction (i.e. Ethiopia, Madagascar, and Uganda), ANC use increased by 8.7, 9.3 and 5.7 percent, respectively, while the FBD utilization increased by 4.7, 0.7 and 20.2 percent, respectively, over the last decade (Alam et al, 2015). Conversely, maternal deaths did not reduce in countries where these services plateaued or decreased (Alam et al 2015).

In effect, the above geographical barriers, even with the health insurance and mother's education can increase costs of accessing these services in such locations. These are both real costs in terms of transport and travel (patient/client and carer) and opportunity costs in terms of risks associated with travel, productive time lost to round-trip travel and inconvenience etc. The situation thus clearly favors the rich and the endowed areas to accumulate more health advantage rather than the poor and deprived areas. Reduction in Social inequality in MCH outcome is thus not achievable. The argument is again supported by health inequality researchers who argue that for social inequality in health to reduce, there must be faster progress in health gain among persons and groups in the bottom two wealth quintiles than that of those in the upper quintiles (Graham 2009; Alam et al 2015; Gakidou and King 2002; Osei-Assibey 2014; Bunker et al 1995).

Improving geographical accessibility to reduce MCH outcome inequality in the Ghanaian context therefore implies, arguably, deploying more functional community-based health facilities and services especially CHPS linked up to a good referral system. Most crucially, is the deployment of the requisite skilled motivated HRH equipped with transport, the essential equipment, quality vaccines, and medicines to provide life course close-to-client MCH services.

**High Impact MCH Interventions**

Neonatal and infant mortality reduction is directly linked to the health of the mother. Maternal health outcomes in turn respond best to the availability (JLI, 2004) and utilization of quality health-promoting life course MCH interventions and related resources in the context of Ghana as argued above. Further, there are generally better maternal and newborn health outcomes where, for example, midwives and doctors are the skilled birth and antenatal care attendants (Zere et al 2012; GSS, GHS and ICF International 2015; Alam et al 2015; Gupta et al 2011; Kojo and colleagues 2018).

**Malaria prevention, care and treatment**

Apart from general environmental sanitation campaign activities of both governmental and non-governmental (NGO) institutions, civil societies and communities, the government of Ghana through the Ministry of Health undertakes national campaigns to sensitize and distribute insecticide treated bed nets to households, particularly pregnant women and children. This is part of an overall campaign strategy to effectively fight against malaria infection especially malaria in pregnancy as a significant contributor to maternal and newborn deaths (WHO 2014). The intervention creates a barrier between mother and the unborn baby and child and the malaria-causing female anopheles mosquito where effectively utilized. On routine basis, these bed nets are distributed at antenatal clinics and other static health facilities as well as outreach clinics. For prophylactic care, pregnant women are given sulphadoxine pyrimethamine (SP) as part of the antenatal care services alongside routine laboratory examinations, routine hematinic supply, and treatment of malaria in pregnancy incidences.

Access to the treated bed nets, given the average household size of 8.5 in this study is grossly limited. It also implies that pregnant mothers in these households are at higher risk of getting malaria and its attendant complications and fatalities. The results are consistent with the 2014

GDHS findings that only 45% of household population have enough insecticide treated nets (ITNs) assuming two people sleep in one net (GSS, GHS & ICF International 2015).

Use of insecticide treated nets and anti-malarials for pregnant women in malaria endemic areas, anti-helminthic prophylaxis treatment and hematinic are high impact maternity services in low-resource countries that impact maternal and neonatal mortalities and inequalities (Bhutta et al 2009; Bawa et al 2017; FIGO 2009). These are quality life course preventive and health-promoting MCH services provided at pre-natal, intra-partum and post-partum stages of pregnancy by skilled health and the primary level. In Ghana, as already indicated, these services are delivered, together with health education and information, at home, community and outreach points, health centres and district hospitals as referral support resource for these close-to-client skilled Providers. For example, anemia in pregnancy due to intestinal worms and malaria is a contributor to maternal, neonatal, infant and child mortality in Ghana and other tropical Africa countries. These services are also free at the point of use. Thus, geographical accessibility to these high impact quality life course MCH services particularly for deprived populations and the poor could engender accumulation of health gain at a faster rate than the endowed or rich populations.

**Family Planning Services**

The low and stagnating contraceptive prevalence rate (22.1%) and unmet need for family planning compelled the passage of a law by the Government of Ghana making the services free under the national health insurance scheme though its implementation is yet to take off (GSS, GHS & ICF International 2015).

A critical component of the family planning services is empowering individuals and couples to freely take informed control of their reproductive health and child bearing needs through information, education and counseling; as well as the provision of affordable safe contraceptive methods and logistics and treatment of reproductive tract infections (Ghana Health Service 2014; GSS, GHS & ICF International 2015; Staveteg 2016).

Increasing UWR clients' geographical access to and utilization of skilled FP Provider services could accrue to the population, the full benefits of reducing maternal deaths by between 30-50% (Marie Stopes 2016). This in turn could contribute to narrowing the FP service coverage and maternal mortality inequality gaps between UWR and the AR and GAR. The expansion in CHPS service coverage in UWR through the construction of several CHPS compounds and the deployment of trained CHOs, equipped with motorbikes is therefore a high impact policy intervention. CHOs, Midwives and Public Health Nurses in particular are trained and resourced to make available, accessible and facilitate FP uptake by women especially faced with some cultural and religious barriers. Male involvement, information and education on the importance and economic and health benefits of FP is a key strategy and skill training requirement of these provider cadres. Counseling and FP device administration are however core FP knowledge and skill trainings given to the providers. For Life course health delivery approach, and the realization of the full benefits of FP, these cadres must be geographically present and identify culturally with their clients for effective FP coverage.

It also means through the current Last Mile Distribution approach to assuring health commodity delivery at service delivery points, FP devices as tracer health commodities will be available 24-hours throughout the year. Another assumption is that the trained providers will have regular knowledge and skill updates through relevant continuing professional development programmes.

This study strongly advocates the use of on-the-job skill training of Providers and effective supportive supervision rather than the more commonly used formal classroom training workshop approach. The latter approach, anecdotally, has been shown to shift some participants' focus to immediate financial gains (transport and travelling allowances, daily subsistence rate etc.) from the workshop rather than the knowledge and skill acquisition and subsequent application to address clients' unmet FP needs. Staveteg's (2016) follow-up qualitative study on insights into low FP coverage and women's unmet FP needs in Ghana, revealed interesting context issues requiring the presence of skilled providers to ensure continuity of FP services in a culturally acceptable manner. The use of culturally acceptable client attraction incentives has been shown to increase skilled deliveries in the three regions in the north in particular. The international award winning Zokkor Initiative of the Upper East Region of Ghana is one best innovation in this respect. The low FP coverage in Ghana and the Northern region in particular could similarly be addressed and contribute to reduce MCH morbidity and mortalities due to unplanned and teenage pregnancies (Marie Stopes 2016).

**Antenatal Care Services**

Statistically significant regional variations in ANC service accessibility and quality outcomes in table 5.2 (annex) means those ANC clients with better access to the services of Doctors and Midwives are more likely to have better intra-partum, delivery and post-delivery outcomes. This in turn implies, arguably, that health variations are already established between the fetuses and newborns of the two categories of ANC clients, that is, those with and those without access to the services of doctors and midwives before conception, during conception to delivery and at least up to after the neonatal period ( first 28 days of life).

By extension, the quality of antenatal care would also influence significantly the health outcome of the mothers and newborns in the two categories who can be double affected under the circumstance; first, the direct adverse effect of poor or lack of quality ANC services on the health of the mother herself as well as the repercussions of the poor or adverse health outcomes of her newborn in terms of miscarriage, still birth (especially fresh or intra-partum) and neonatal death, among others. For example, only 46.3% and 45.5% of pregnant mothers taking a drug outside and during ANC visits to prevent malaria and its complications is significant indication of ANC service quality. This suggests a situation where Sulphadoxine pyrimethamine and artesunate combination are out-of-stock at the point of use at the health facility or skilled ANC provider. The introduction of the Ghana integrated Logistics Management Information System (GHiLMIS) and the Last Mile Distribution (LMD) interventions, if effectively implemented, could assure uninterrupted essential maternity health commodity availability at the point of use. MCH service quality, coverage and outcomes among women in poor and deprived communities such as the UWR could in turn improve and, arguably, contribute to reduction in MCH inequalities.

The low proportion (less than 4 in 10) of pregnant mothers receiving instructions from a Health Worker during ANC to call them at onset of labor also undermines the power of mobile technology in quality maternity service coverage and outcomes. This is because the intervention helps to establish important rapport between skilled ANC and birth attendant and the clients. Thus, client's knowledge and understanding are enhanced about the dangers to mother and the unborn where mother is a non ANC attendant. Further, clients could understand better why they must be delivered by a skilled birth attendant like a Doctor or Midwife particularly clients with one complication in pregnancy or the other. Maternal and neonatal mortalities commonly caused by hemorrhage, raptured uterus and other complications in pregnancy in Ghana could therefore be prevented with timely skilled

obstetric interventions by Midwives and doctors (JLI 2004; Alam et al 2015; Zere et al 2012; Bawa et al 2017).

Increases in geographical access to quality ANC services has been associated with significant reduction in maternal, neonatal and child mortalities especially among pregnant women in poor and rural African countries (Olorunsaiye 2015; Alam et al 2015; Zere et al 2012; Gwatkin 2017; Butta et al 2009).

Equality of geographical access to quality ANC could, arguably, narrow inequality in MCH coverage and outcomes between the poor and rich or rural and urban populations. For example, a declining trend in Prevention of mother to child transmission (PMTCT) service coverage means increasing HIV/AIDS-related newborn morbidity and mortality among disadvantaged population groups. As indicated in chapter two of this thesis, PMTCT is the commonest mode of passing HIV from mother to child since the risk associated with mothers without anti-retroviral treatment is between 15-45% in Ghana (UNDP-NDPC 2015). Quality PMTCT as a life course mother and infant service is provided by trained midwives and doctors resourced with necessary diagnostic facilities. The regional variations in ANC services therefore implies that UWR's unborn babies and infants are at higher risk of intra-partum and neonatal death compared to the AR and GAR.

**Delivery and Post-delivery care services**

The preceding section pre-empts the high risk of mortality associated with women in labor delivering on their own or by birth attendants other than Midwives and Doctors. This is due to the high risk of a woman experiencing a raptured uterus, hemorrhage, retained placenta, prolonged labor and baby in breech position, among other complications requiring a doctor or Midwife's urgent skilled intervention. Thus, timely caesarean section (CS), manual removal of placenta, manual vacuum aspiration (MVA), neonatal resuscitation, among others are

signal functions requiring the services of doctors and midwives (Gupta et al 2011; Zere et al 2012). This is to assure healthy delivery of both mother and baby with good maternal and newborn health outcomes.

Current maternal health and newborn care policies have therefore sought to promote access to skilled attendance at birth for every pregnant woman living in Ghana. Skilled delivery coverage still falls below annual national targets (Ministry of Health-Ghana 2014; Ghana Health Service 2015) especially for populations or communities where birth services by doctors and midwives are inaccessible.

Institutional maternal and neonatal deaths thus rise due to the three delays namely household decision to use skilled birth attendants, community level delay due to lack of appropriate community transport system and institutional delay by health workers. This is against the backdrop of maternal delivery being free at the point of use under the national health insurance law (Agyemang et al 2014; Osei-Assibey 2014) as indicated in the preceding sections and chapters of this thesis. Respondent Mothers in this study who delivered at home cited health facility being far as reason for their choice. This means geographical barriers, more than financial and mother's formal educational or occupational status would explain these mothers' low skilled birth attendance coverage and consequential maternal and neonatal deaths. Geographical inequalities therefore, arguably, would explain more of the MCH inequalities than the other social determinants (Bunker et al 1995; Olorunsaiye 2015). Evidence base indicates that the higher the coverage of skilled birth attendance (SBA), the smaller the rich-poor inequalities (JLI 2004; Neal et al 2015). For example, in countries with very low SBA coverage, that is, less than 30%, the rich-poor gaps are large, at around 60 percentage points; while a smaller gap, less than 20 percentage points, is observed in countries having high coverage (JLI 2004; Neal et al 2015; Balabanova et al 2013). This again implies that with equity in RMNCH service provision in LMICs through UHC policies,

strategies and interventions, rich-poor and endowed-underserved population health inequality gaps could narrow progressively.

The statistically significant high inequity in the distribution of doctors and midwives in table 5.2 (annex) means the UWR could experience comparatively worse maternal and child health outcomes. For example, the Ghana 2014 Demographic and Health Survey found the GAR to have the highest access to skilled assistance at birth of 92% compared with 36% in the Northern region (GSS, GHS & ICF International 2015).

However, according to the 2014 GDHS, though the three regions in the north comparatively lacked doctors and therefore had very low skilled birth attendance by doctors, they made good progress in skilled delivery coverage by using optimally their available Midwives (GSS, GHS, & ICF International 2015).

By the safe motherhood policies and professional practice regulations, Midwives and Doctors also receive regular mandatory safe motherhood and newborn care skill training and knowledge update. And renewal of practice license of a Doctor or Midwife is subject to the Practitioner's annual credit points accrued from accredited Continuing Professional Development programmes successfully attended.

Safe motherhood and newborn care protocols are, by policy, also available and accessible to Practitioners in labor, maternity, neonatal intensive care units, lying-in and children's wards. Thus, with necessary supervision through personal contact and or tele-consultation between frontline doctors and midwives and Specialists and Consultant Obstetrician Gynaecologists, maternal and neonatal emergencies and related preventable deaths could be saved.

Moreover, TBAs, friends and relatives accounted for 5.1% of deliveries in this study. The maternal delivery policy encourages greater collaboration between TBAs and the skilled

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providers and trained nurses. The TBAs are to be motivated to bring women in labor in their homes or communities to the nearest health facility or skilled provider to deliver. Domiciliary delivery by skilled providers is also encouraged.

This means the services of skilled birth attendants particularly the midwives must be as close-to-client as practicable, that is, within the community for the policy objective to be attainable. This is again against the backdrop of the strong tradition, especially in some northern rural communities, for women to deliver at home as a mark of fidelity to the husband.


Currently, very few midwives provide routine midwifery services at the community level. Yet fewer are the numbers in rural and hard-to-reach communities where the CHPS as the smallest health unit of the Ghanaian health system exist. Health providers commonly found at this level are the community health officers or community health nurses and the 'enrolled' nurses (auxiliary nurses). Relatively very few of these cadres have very limited on-the-job training to provide only emergency delivery services and refer to the nearest health center or district hospital for the attention of a midwife and or a doctor. This skill gap at this strategic primary health care level is gradually being narrowed with the re-introduction of the post-basic Midwifery Training Programme for CHOs, CHNs and Enrolled Nurses.

Further, 43% of respondents experienced one delivery danger sign or the need for emergency obstetric care by doctors and midwives. The 2.2% of these referred to skilled providers by TBAs in their respective communities further suggest some conclusion. First, it implies a skilled provider gap at the community level particularly the rural and hard-to-reach areas, and the very high risk of maternal and newborn death.

Second, it is an indication of the magnitude of the maternal death and newborn deaths or birth trauma in such communities that can go unreported; especially when also linked to the

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tradition of home delivery as a sign of fidelity to the husband. Thirdly, it is an indication of TBAs potential to cooperate and support the skilled assistance at birth policy interventions. It is therefore the opportunity for skilled providers and policy makers to improve collaboration with them and improve clients' access to skilled delivery services. Indeed, 11.4% of those who experienced these danger signs eventually delivered through caesarean section. These, plausibly, could have been missed opportunities and preventable maternal deaths if they had been held back for geographical barriers such as distance to facility, culture and gender, transportation and lack of doctors and midwives and logistics.

Babies born to 5% of respondent mothers in chapter five of this thesis required some life-saving neonatal interventions. These include resuscitation of babies with breathing difficulty. Asphyxia is one major cause of neonatal mortality in Ghana and other LMICs (Bhutta et al 2009; Gupta et al 2011; UNICEF-Ghana 2014). The fact that 11.8% of these babies did not receive such life course critical interventions further suggests the quality of the birth attendants involved, in knowledge and skill at delivery or obstetrics. In other situations, it is suggestive of workload burden consequential to acute shortage or absence of skilled providers in such areas.

 Gupta et al (2011) and UNICEF-Ghana (2014) asserted that building competencies and authorizing midwives and other non-doctor clinical cadres to perform signal maternal and neonatal functions such as neonatal resuscitation and caesarean section significantly influence reduction in maternal and newborn deaths in low-income, rural and deprived communities. Universal health coverage in MCH and reducing inequality therefore means that geographical accessibility barriers to women, unborn babies and newborns in resource-poor or hard-to-reach areas must be practically removed.

Breastfeeding, particularly the first breast milk immediately after delivery has been shown by research to be most critical newborn survival, growth and developmental resource (UNICEF-Ghana, 2014; Bhutta et al 2009; UNFPA 2013). In this study, the fact that less than 3 in 10 mothers were able to breastfeed their babies up to twelve months is indicative of these mothers requiring technical support during the breastfeeding policy period of 24months. Babies delivered by midwives for instance, are more likely to be breastfed timely immediately after delivery as their mothers receive breastfeeding initiation support. Continuing breastfeeding support especially for mothers experiencing one difficulty or the other, is provided until baby and mother are discharged home. Also, during first week post-delivery health checks on baby and mother; postnatal and child welfare clinics, midwives, Nutrition Officers and other health staff trained on the breastfeeding policy provide necessary support.

For continuity of care at home or community, selected peer mothers are trained and linked to breastfeeding mothers in their communities as mother-support groups (MSGs), aside from home visits conducted weekly/daily by Community Health Officers or Nurses. Beneficiary babies are therefore more likely to optimally tap their growth and developmental potential and improve their early life chances. Good adult health and life expectancy at birth are closely associated with quality of early life chances of the individual (Russ et al 2014; Steinbach 2016; Bunker et al 1995).

MCH Research further indicates that the risk of neonatal and maternal deaths is highest within the first 28-days of life or delivery (UNICEF-Ghana 2014; UNFPA 2013; Bhutta et al 2009; Russ et al 2014). For example, high neonatal mortalities accounted largely for child mortality rates in Ghana over the years (Ministry of Health 2013; Ghana Health Service, 2012; GSS 2011). This led to the scale up of newborn care policy interventions by Government with the support of health partners like UNICEF and the Korea International

Cooperation Agency. These interventions include but not limited to, the free maternal delivery, still birth audit, training of health providers on evidence-based newborn care knowledge and skills (such as the Kangaroo Mother Care- KMC); and the expansion and upgrading of some maternal and newborn care facilities and equipment in health facilities. The major causes of the deaths are infections (31%), pre-term and low birth weight and delivery complications like asphysia (UNICEF-Ghana 2013, 2014)

Thus post-delivery health checks for mother and baby by midwives and doctors are critical high impact life course maternity interventions shown to impact mortalities and inequalities (UNICEF-Ghana 2014; Alam 2015). Respondent mothers and their babies in UWR accordingly had the worst maternal and newborn outcomes due to the HRH inequity in favor of AR and GAR. The argument is supported by the fact that less than 3 in 10 mothers were seen by a doctor or midwife for their first week post-delivery health checks. In addition, more than 9 in 10 babies experiencing one illness episode or the other implies high risk of mortality for babies without access to doctors, midwives and pediatric nurses.

The argument is supported by the reasons assigned by mothers of these babies for inability to use the services of these skilled post-natal care providers. They include: the facility was too far or no transportation; cost of treatment/service too high; facility not trusted or poor service quality; or the TBA did not allow (GSS, GHS & ICF International 2015; Olorunsaiye 2015; Bhutta 2009; Russ et al 2014).

Further, maternal and childhood immunization coverage and outcome inequality gap as indicated above is narrowing in LMICs due to active national immunization campaigns and routine services in homes, outreach points and clinics (Ross 2015; Alam et al 2015; Gakidou and King 2002; Mutangadura et al 2007; Olorunsaiye 2015). The UHC and CHPS approaches adopted by government of Ghana has achieved greater immunization service equity among

the poor and deprived population than populations in the upper quintile (UNICEF and NDPC 2014; Osei-Assibey 2014; Gakidou and King 2002). Further, these close-to-client immunization services are generally provided by CHOs and Community Health Nurses. Thus, geographical accessibility of skilled providers and necessary vaccines and logistics appears to have contributed more to immunization coverage and outcome inequality reduction in Ghana and other African countries than other social determinants (Mutangadura et al 2007).

**Impact of High-impact MCH Interventions**

Chapter five (Table 5.2-annex) depicts UWR as worst-off with respect to respondent households' general mortalities recorded in the past ten years (up to the time of the study), miscarriages, still births and neonatal deaths. The results and discussions also support the study hypothesis or theoretical propositions. Thus, increasing geographical accessibility of the above high impact life course MCH interventions and services at a higher rate to the UWR could contribute more to reduce MCH inequality between the region and the AR and GAR than other social determinants. Indeed, according to Balabanova et al (2013) achieving a favorable UHC outcome requires strengthening physical access by improving geographical coverage of health services, and financial access by extension of financial risk protection mechanisms as two essential parallel synergistic interventions. Accelerated geographical accessibility to skilled MCH provider services, to an extent, also mitigates financial risks or barriers to MCH coverage and outcome inequality reduction by eliminating direct and indirect costs associated with distant location of these services in resource-poor communities.

**MCH Inequality: Income, Education and Occupational Explanations**

Both hierarchical logistic regression and hierarchical negative binomial regression results in chapter five of this study support the assertion that health care access offers significant

explanation to variances in both incidence and total neonatal mortalities. On the other hand, income, education and occupation as control variables are significant in explaining the variances in only total neonatal mortalities. Bunker et al (1995), JLI (2004), Victora and colleagues (2017); Bhutta et al (2009), Gupta et al (2011), UNICEF-Ghana (2014) and Zere et al (2012), among others, also assert that MCH mortalities and inequalities respond best to access to skilled Health Care Providers.

Income, educational attainment, classified occupation, housing and health care are thus key social determinants of health and predictors of health inequality among social groups, and populations within and between countries (WHO 2008, 2016; Marmot 2005; Bartley 2004; Townsend, Davidson and Whitehead 1986; Sadana & Blas 2013; McGinnis 2002). At least 75% of the causes of health inequalities are attributed to the unfair and avoidable distribution of social determinants of health perpetrated by ineffective public policy agendas (Sadana & Blas 2013; Kingdon, 2011 2015).

Sadana & Blas (2013) have argued that the non-direct health care social determinants of health explain 50% of the causes of health inequalities. Other empirical and theoretical studies have also argued that health care though important, contributes relatively far less than elements of social class to health inequality reduction (WHO 2016; Marmot 2005). Child mortality reduction as an MDG and SDG target is thus most sensitive to effects of absolute material deprivation. Poverty then operates to increase the susceptibility of the poorest social groups to natural disasters and disease and leave them in poorer health (Marmot 2005 Bartley 2004, 2007; WHO 2008, 2016; GSS, GHS & ICF International 2015).

 In the Ghanaian context, the bulk of the population's health needs are primary health care services and maternal and child health services are free at the point of use. Reduction in neonatal mortality inequality, arguably, could therefore respond best to increased

geographical accessibility of skilled health providers. The argument is supported by evidence of reduction in vaccine preventable childhood mortalities in Ghana and sister West and East African countries through close-to-client service arrangements (Mutangadura et al 2007; Olorunsaiye 2015, Gakidou and King 2002; Osei-Assibey 2014). In this context therefore, materialist explanation to MCH inequality is, plausibly, insufficient and less, compared to increased geographical accessibility and utilization of life course high-impact MCH interventions.

Various studies have also linked social class health differences to differences in 'risky' health behaviors and culture, in turn consequential to lack of education, low income, low social status and other social position measures (Townsend, Davidson and Whitehead 1986; Bartley 2004).

Long-term studies however show that differences in health behaviors and culture explain only a third of social class differences in mortalities (Steinbach 2016; Bartley 2004). Income poverty also offers an incomplete explanation and has a weaker relationship with life expectancy signified by the flatter 'marmot curve' between 2006 and 2010 (Buck and Maguire 2015).

Again, though both empirical studies and administrative data attribute social class health inequality to levels of educational attainment and occupational status, there is large scientific evidence that show little or no health difference and sometimes even better health improvement among populations without secondary education compared to those with secondary or higher education (GSS, GHS & ICF International 2008, 2015; Bunker et al 1995).

For example, up to 35% neonatal mortality reduction rate for newborns whose mothers were with 'no education', 'primary' and 'middle/JHS' compared with 33% points increase in

neonatal mortality for newborns of mothers with 'secondary+' (secondary or higher education) (GSS, GHS & ICF International 2008, 2015). This means, arguably, that though educational attainment is significant a social determinant of health, access to quality health care could be far more significant a contributor to health-gain particularly in maternal and child health in the Ghanaian context. Sadana & Blas (2013) asserted that at least 25% of causes of health inequality are explained by lack of access to effective health care, and even far more proportion when contributions of other health components as water and sanitation are added. As noted in chapter five and the preceding sections of this chapter, the UWR region is worse off in safe sanitation and water facility components of their health care resources compared to the AR and GAR signified by the chi-square test results in table 5.2 of the annex

There is also scientific evidence that informal family educational program interventions transfer inter-generational socio-economic advantage and help reduce health inequality between the disadvantaged and the better-offs in society (PHE 2014; Bunker et al 1995). This suggests there could plausibly be more significant complementary explanation (s) for the unfair variances in health outcomes between the three regions in the north of Ghana and the southern counterparts than formal educational attainment and income poverty.

It further asserts the argument that social class and geographical health inequality between the north and south of Ghana could plausibly still reduce without formal educational qualifications if effective health equity policy actions assure geographical access to and utilization of cost-effective health care interventions by those who actually need to receive them (Marmot 2005; Arcaya et al 2015). For example, health client focus groups in this study emphasized availability of qualified health personnel delivering informative and educative key health messages through regular and frequent health talks in the local context over formal

education. Health talk helps minimize negative health-seeking behaviors, cultural and religious beliefs and degenerative health practices like alcoholism and unhealthy diet.

This means clients, with close-to-client life course health education/promotion interventions without formal education, could plausibly accumulate health gain at a faster rate than some high educational achievers. In this context too, health messages and counseling services must be packaged and delivered in a culturally accepted and comprehensible manner to effectively impact service uptake, coverage and outcomes among the target population. For example, CHPS services which form the nucleus of Ghana's PHC system are not only predominantly targeting MCH services but more importantly are community-led identified health needs. The services are also planned, organized and delivered by the community, with the community and for the community using guided community-selected Health Volunteers and Community Health Management Committees. Service delivery is then technically supervised by the CHO or CHN trained on a fifteen module CHPS concept. The CHO who is a member of the CHMC is properly introduced at a community durbar of chief (s), opinion leader (s) and the community members alongside the rest of the CHMC members.

I further argue that both mothers with education and mothers without education are equally at risk of religious beliefs and practices inimical to MCH outcomes if without quality maternal health education and counseling on evidence-based life course MCH interventions. For example, Iwelunmor, Airhihenbuwa, & Gbadegesin (2017) argued that faith and spirituality influence childbearing decisions among women living with HIV/AIDS (WLHA) in Nigeria. Understanding this link is thus important for increasing the number of WLHA who effectively utilize high impact life course MCH, and for eliminating new paediatric HIV infections post-2015 (Kalipeni, Iwelunmor & Gridsby-Toussaint (2017).

**Neonatal Mortality Trend by Wealth Quintile**

The trend analysis of Ghana Demographic and Health Survey data before 2003 up to 2014 indicated higher percentage point reduction in neonatal mortality among the bottom two and middle wealth quintiles than the upper quintiles (table 5.4 of chapter five). This suggests that with increased geographical access to quality reproductive, maternal and child health care services for the poor, the 'no education' and the below secondary educational level achievers, regardless their locations within the two geographical divides, there could be a corresponding narrowing of the MCH gap between them and the higher quintiles (Zere et al 2012; Gupta et al 2011; Dovlo 2007; McGinnis 2002 and Sadana & Blas 2013). For instance, increased accessibility and utilization of reproductive health counseling and family planning services enable health clients, regardless educational and income background, to make informed life choices regarding sexual health, appropriate numbers and birth spacing (GHS 2013, 2014). Thus, intergenerational safe family reproduction is plausibly engendered which in turn leads to significant reduction in maternal and neonatal deaths (GHS 2013, 2014; Marie Stopes 2016; Zere et al 2012; GSS 2011; Gupta et al 2011). This further implies intergenerational transfer of health-advantage also engenders favorable circumstances for increased productivity and wealth creation among the socio-economically disadvantaged groups (Ministry of Health-Ghana 2007, 2013, 2014; PHE 2014).

In the context of MCH inequalities, life course approach to inequality reduction and precarious food security situation in the three regions in the north, nutrition is key life course MCH intervention. In fact, food security in the three northern regions is threatened by the short lone raining season in a year compared to the two seasons in the south; and though farming is their pre-dominant source of livelihood, government has over the years not invested adequately and appropriately in dam construction to ensure irrigation farming during the long dry season; and all-year- round food production and other agriculture activities.

The situation therefore contributes significantly to the high deprivation and unattractiveness of these regions to skilled health, agriculture, education and other health-related professionals to accept postings to or be retained there to serve their populations' needs. Further, food stuff in excess of a household's food requirements could also be sold for income and help meet health insurance registration or renewal fees where applicable or cost of transportation only in cases of necessary referral by health professionals in the community to the district, regional or tertiary hospitals.

Thus it could be concluded that, appropriate state investment in equitable access to food and nutrition resources and services in the north, as sub-component of health care, could plausibly contribute more significantly to health outcome inequality reduction between the north and south than income poverty, education and occupational class (Osei-Assibey 2014).

Maternal nutrition as already indicated is one high impact, life course intervention linked to positive maternal and newborn health outcomes; reduction in MCH inequality and enhances early life chances of newborns and children' developmental potential (Bhutta et al 2009; Russ et al 2014; Victora and colleagues 2017). Good in-vitro nutrition of the unborn baby as well as breastfeeding, particularly the first breast milk immediately after delivery has best been associated with development of the brain and immune systems (Russ et al 2014; UNICEF-Ghana, 2014). The Children are also associated with high educational achievement and good adult health (PHE 2014; McCartney et al 2013).

**MCH Inequality: Human Resource Policy Explanation**

Maternal and neonatal mortalities responded best to increases in availability of trained service providers (JLI, 2004 ; Gupta et al 2011; Zere et al 2012; Sadana & Blas 2013; Russ et al 2014). This assertion supports the findings of this study which affirm that both incidence and total neonatal deaths in respondent households responded best to geographical accessibility to

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MCH services provided by skilled health providers such as doctors and midwives. Thus variance in household neonatal mortalities (incidence and total) is far more explained by increased geographical presence and utilization of skilled MCH providers. In contrast, respondent mother's income, education and occupation significantly explain variances in only total neonatal mortalities in respondents' households.

Health care access has been defined in this study to include life-course quality population health care services (not only medical care) provided by doctors and midwives, as skilled providers, to women in the reproductive age of 15-49years and children. These life-course services range from preconception, through conception to delivery and post-delivery population-based and individualized health care needs that assure healthy newborns and mothers living, growing, working, reproducing safely and dying at very high life expectancy at birth (Steinbach 2016; Bartley 2004, 2007; WHO 2008, 2016). UNICEF & GHS (2011) and Zere et al (2012) further asserted that it takes acceleration of skilled health provider and funds deployment in the three regions in the north of Ghana to narrow the huge maternal and neonatal mortality gaps separating them from their southern counterparts. Accelerated geographical accessibility to skilled MCH Providers and related services in UWR as a continuum and long-term intervention is required. This most likely improves maternal and newborn health outcomes (Bunker et al 1995; Russ et al 2014; Zere et al 2012; Steinbach 2016) at a faster rate (Graham 2009; Victoria and colleagues 2017) than mother's education, income and occupation. Maternal and newborn mortality inequality gap between UWR and the AR and GAR could thus narrow over time.

This life course approach to even up access, utilization, coverage, outcome improvement and reduce MCH inequality is further justified by the scientific evidence that newborn health is ultimately linked to maternal health. Thus MCH services must essentially be integrated and

holistically delivered by skilled providers (Bhutta et al 2009; Bawa et al 2017; Alam et al 2015).

Health clients in the GAR ascribe unfair variances in MCH outcomes between them and their deprived counterparts in the UWR more to effects of the high-impact life course MCH services of the skilled health providers present in their communities and homes.

Thus they attest to feeling and appreciating the positive influence of the providers on their health. For example, the daily proximity and interaction between client and health provider increases accessibility and utilization of quality health education, family planning, antenatal, obstetrics and emergency obstetric care and neonatal care services. Cost of services is also affordable due to exclusion of travel and transport costs, risks associated with long distance travel, especially maternal emergencies, and other opportunity costs. Thus, the statistically significant differences in geographical accessibility of skilled MCH Providers and associated MCH inequality established in chapter five are further explained by the clients.

The neonatal mortality inequality gap could narrow if mothers and newborns in UWR gained health at a faster rate (Graham 2009; Russ et al 2014) through more increased proximity and interaction with skilled MCH providers in their communities and homes. Newborns of mothers with and mothers without formal education, given equal quality MCH opportunities within same geographical setting, arguably, could utilize and gain equal health over time. The argument is supported by evidence of immunization coverage and outcome inequality studies in LMICs which suggest narrowing immunization inequality gap due to faster health gain among the poor and deprived populations or areas (Mutangadura et al 2007; Alam et al 2015; Gakidou and King 2002).

Government's investment to increase geographical accessibility and utilization of skilled MCH provider services and resources in resource-poor areas also has the added benefit of

creating income-earning opportunities for non-income earning mothers and their households. For example, national antimalarial campaigns and services include training and use of paid mothers and youth in the distribution of long-lasting insecticide treated nets (LLITNs) especially for use by pregnant women and children. Others are engaged in sanitation activities as part of malaria prevention interventions. National immunization campaigns and services for mothers and children also come with similar positive externalities including opportunity for social capital through networking and income. For example, Restrespo-Mendez et al's (2016) coverage trend study involving African countries asserted that Madagascar and Mozambique made the greatest progress in improving levels of full immunization coverage over the last two decades, particularly among the poorest quintiles of their populations.

This in turn contributes to mitigate some negative psychosocial impact on the health (Hatzenbuehler et al 2013; WHO 2016; Steinbach 2016) of these mothers and their children and therefore improve maternal, neonatal and child health outcomes. Further, community-based pregnancy schools especially for teenage mothers and mother-support groups for breastfeeding support are other high impact psychosocial support services that come with presence of skilled MCH providers. Several research studies have indeed associated long life expectancy with people who have good relationship with families and friends and participate in community (Steinbach 2016).

In addition, midwives and doctors provide PMTCT services not only to prevent HIV infection of unborn babies but also the impact of related psychosocial counseling services. These services potentially minimize the effects of health risks associated with social stigma and stress on mother and unborn baby. Various forms of excessive stress have also been shown as early risks of future health development (Russ et al 2014). According to Russ et al (2014), by epigenetic mechanisms, health cues and genes from mother are transmitted to the

unborn baby through the placenta and nutrition. Thus, the health outcomes and quality of life chances of the unborn baby depend largely on the womb that bore it (Russ et al 2014; Ross 2015). Infant mortality rates were also discovered to be directly dependent on the health of the mother, only falling when the vitality of women in Child bearing age improved (Smith and Kuh 2001; JLI 2004; Russ et al 2014)). For example, accessibility and utilization of PMTCT, health education and counseling services by mothers living with HIV/AIDs most likely increase the chances of their babies born healthy and without HIV infection (Kalipeni, Iwelunmor & Gridsby-Toussaint (2017).

This further means that besides ensuring availability and equitable access to life course MCH care services, employment for the youth could also significantly help reduce health outcome inequalities by reducing the proportion of youth population that is Not-in Employment-Education-Training (PHE 2014). Youth aged between 16 and 18years who are not in employment, education or training are particularly associated with poorer health outcomes due to their greater exposure to psyho-social and health-damaging tendencies and behaviors (PHE 2014).

One other high impact life course MCH intervention that arguably could reduce maternal and neonatal mortality inequalities is targeting adolescents and teenagers with skilled adolescent sexual health service providers. Thus the Ministry of Health/Ghana Health Service's Adolescent health policy seeks to provide for the unmet health needs of this sexually most active vulnerable population using close-to-client and client-friendly Adolescent Corners at strategic locations (Ministry of Health 2000; UNFPA 2011). Adolescent and teenage pregnancy is culturally frowned up by most cultures in Ghana particularly the northern sector. Further, education and counseling on adolescent sexuality are regarded taboo in such cultures

and therefore neglected by most parents and guardians (Davies 1995; Ministry of Health 2000; UNFPA 2011). The victims thus feel stigmatized and stressed with associated negative impact on their health and that of their unborn babies (Hatzenbuehler et al 2013; WHO 2016; Steinbach 2016; UNFPA 2013; Lowe, Chen &Huang, 2016; Bawa et al 2017).

Thus, the UWR adolescent and teenage mothers with relatively very limited geographical access to skilled MCH providers are most at risk of unwanted pregnancies, unsafe abortions and maternal and neonatal mortalities. Indeed, teenage maternal deaths account for a significant proportion of maternal deaths in Ghana (UNFPA 2011, 2013; Olorunsaiye 2015).

Health clients in the UWR assert that geographical presence of skilled MCH and other health providers in their communities '…will help save life on time…' (FGC25-32) more than formal education, income and occupation, using the close-to-client CHPS primary health care service arrangements. Riverine communities such as Sombo in the Nadowli district are most at risk of high maternal and newborn mortalities for absence of midwives and/or appropriate means of transport to transport pregnant mothers and neonates requiring emergency MCH care. The situation is not different in even the non-riverine hard-to-reach communities since both commercial community and private means of transport are very scarce. At best, some communities access commercial community transport only on their weekly market days.

In this context, CHPS compounds with motivated resident Midwife and trained CHOs that are equipped with essential equipment and motorbikes are critical life-saving interventions. These skilled providers linked to Medical Doctor/Obstetrician Gynaecologist and Paediatrician at District Hospital via tele-consultation technology could avert most preventable maternal and neonatal deaths. This is because health clients in such communities have no option than to resort to self-medication, delivery by TBA, their herbal preparations

and other harmful cultural and religious beliefs and practices for lack of access to skilled

MCH providers (Olorunsaiye 2015; Zere et al 2012; Bawa et al 2017; Gupta et al 2011).

Relatively higher proportions of variances in incidence and total neonatal deaths and iMMR

are explained by mothers' and newborns' access to skilled midwives and doctors compared

with education, income and occupational characteristics of mothers (tables 5.3 and 5.4). At

the same time, there is evidence of a narrowing inequality gap in doctor to population density

ratio and midwife to WIFA ratio between the UWR and the AR and GAR between 2008 and

2014 as presented in chapter five. The association between the narrowing inequality gap in

neonatal and maternal mortalities and the faster improvement rate (Graham 2009) in the

skilled MCH provider density ratio in UWR could be explained in three main complementary

ways.

**Medical education reform: A panacea to geographic HRH inequity**

First, various scientific HRH research evidence indicate that medical education reform

reflecting contextual practice location factors is an effective and successfully implemented

strategy for addressing geographic in-balances in distribution of doctors (Dussault and

Franceschini 2006; Kojo and colleagues 2018; Alam et al 2015). Doctors are by this trained

within rural and deprived area settings and thus oriented and attracted to stay and work in

similar geographical areas.

In the Ghanaian context, this evidence is supported. For example, the Northern region has

very significantly narrowed its doctor density ratio inequality gap, compared with AR and

GAR, with the establishment of the University for Development Studies (UDS) in Tamale.

The UWR drew on this opportunity in the sister region. And, more importantly, using its own

local doctor attraction and retention strategies was able, for the first time, to achieve a net

density improvement of 50% between 2012 and 2014, compared with 9% and 19% in AR and

GAR respectively. The net improvement margin in the midwife to WIFA ratio was even wider for the UWR for same period. This is attributable to the decentralization in 2009 of the Midwifery Training Institutions to all the ten regions of Ghana. Thus, UWR was able to train and retain midwives to meet its regional requirements.

**HRH availability & productivity: Effective use**

Second, effective supervision of available staff, including support systems increases staff productivity, retention and availability (JLI 2004; Manzi et al 2012). UWR effectively utilized its available midwives to increase deliveries by skilled birth attendants and thereby narrowed the skilled delivery coverage and outcome gaps compared with AR and GAR. One justification for redistribution of skilled MCH staff, particularly doctors, is the evidence that overconcentration results in their under-utilization or under-performance (Dussault and Franceschini 2006).

Total cost of health care also increases to the tax payer in terms of compensation expenditure and related overheads, and also internal and external brain-drain (Dussault and Franceschini 2006). In the cities, urban and peri-urban areas in Ghana with several opportunities for private practice and locum, public sector doctors, midwives and nurses tend to moonlight. Thus they get over worked, lack sufficient rest and therefore ineffective when on duty in the public hospital. In such situations, their impact on maternal and neonatal outcomes could still be sub-optimal due to poor service quality and/or unavailability during duty hours. This situation is pervasive in Accra and Kumasi the capital cities of GAR and AR respectively. Accra also doubles as the national capital. One would then expect that with these regions' perennial gross disproportionate share of doctors (Consultants, Specialists and experienced General Practitioners over concentrated at the Teaching, Regional and District Hospitals), MMR and NMR would correspond to a large extent. On the contrary, regional maternal and

neonatal audit reports suggest that despite the available internal capacity, most of these neonatal and maternal deaths which were preventable were not averted.

**Mitigating gender-related barriers**

The third explanation is the positive mitigating effects that equal geographical access to skilled MCH Providers could have on gender-related barriers to quality life course MCH service accessibility, utilization and coverage and outcome inequality reduction. In the Ghanaian and other African country context, cultural, religious norms and values tend to disempower the position and role of women, adolescent mothers and persons with disability, among others. Accessibility and utilization of skilled MCH provider services are thus limited. Coupled with the long distances to facility and related costs in deprived, rural and remote communities, these vulnerable groups are further constrained in owning their health and participating in the community.

In Gambia, women's position in households is cited as a fundamental cause of its unacceptably high maternal mortality as majority of rural women fail to access emergency maternal care. They also patronize TBA delivery services far more than skilled MCH Providers (Lowe, Chen and Huang 2016). Such Social and normative prescriptions related to gender (White et al 2013; Furuta & Salway 2006) also influence Ghanaian and other African women's non participation in political and some socio-economic careers (Osei-Assibey 2014).

Increased geographical presence of skilled CHOs, Midwives and doctors in these communities and households could empower these vulnerable groups to access their unmet MCH needs on a continuum and life time basis. In Ghana, innovative ways to achieving this include CHPS implementation at community and household levels with focus on life course high-impact MCH interventions, male involvement in family planning, ANC and delivery

interventions. Intensified routine health-seeking behavioral change communication, education and counseling (at home, community durbars and special health corners), use of mother-support and father-support groups, and integrated approach to MCH service delivery are central to gender empowerment. Lowe, Chen and Huang (2016), Sen (1990) and Agarwal (1997) posit intra household "bargaining" of gender relations, that is, power relations between man and woman as a useful household conceptual insight.

In chapter five of the thesis, health client focus groups also assert that they are empowered to own their health, access quality life course MCH services and interventions and improve their MCH outcomes due to health education, counseling and support of midwives, doctors, CHOs and other skilled Providers.

In summary, the policy implications therefore are that every community ought to have resident trained health providers. At the barest minimum, CHOs and a Midwife in a CHPS zone, equipped with necessary motorbike and access road, basic medical equipment and accommodation with the basic living and working amenities such as energy and water supply are basic policy imperatives.


**Reducing Neonatal and Maternal Inequalities: Effective Policy Options & Actions**

Coherent evidence-based policy actions and interventions relevant to local context issues are needed for sustainable reduction in health outcome inequalities in both developing and developed countries (WHO-CCSDH 2015; Buck and Maguire 2015; PHE 2014; Marmot 2005 Asthana and Halliday 2006; Gupta et al 2011 and Zere et al 2012).

Gupta et al (2011) also found that local context-based human resource policy interventions positively impact health care equity and reduction in maternal and newborn mortalities in some low-income and middle-income countries including Ghana.

In this study, the UWR in collaboration with respective District Assembly designed its own doctor attraction and retention incentive system, based on some of the local factors influencing doctors' refusal to locate their practice in the region. The region also draws on newly qualified doctors from the UDS in the sister Northern region, thus trained in local settings similar to that of UWR, to improve its doctor density ratio by 50% between 2012 and 2014. Even far more Midwives have been trained, retained and utilized by UWR to improve accessibility and coverage of quality life course MCH services to its deprived, remote and rural communities. The decentralization of Midwifery Educational Institutions to the ten regions was a major enabling policy support to UWR to achieve this.

Results in Chapter five and discussions in the preceding sections of this chapter further show statistically strong association of these interventions with reduction in both MCH service inequity and neonatal and maternal mortality inequality gaps between UWR and the AR and GAR. The regression analysis results, more importantly, additionally suggest that increased geographical presence of these skilled MCH Providers explain more the variances in household neonatal mortalities than mother's education, income and occupational status. This central contribution of the study to the body of knowledge relates to Ghana's context of achieving universal health coverage by 2020. Thus particular focus is on community-based health planning and services delivering high impact life course MCH care in homes, outreaches and CHPS compounds.

Zere et al (2012) in a maternal and newborn health care study in northern Ghana asserted that acceleration in human resource and fund deployment is the pre-requisite for Ghana's MDG attainment and reducing maternal and newborn health outcome inequalities between the three regions in the north and the southern sector. Olorunsaiye (2015) and Gakidou et al (2007) also found maternal and child health inequity and inequality reduction between the poorest and richest quintiles and the rural and urban populations in West, East, North, and southern

African countries. Extensive national child and maternal vaccination campaigns and routine door-to-door service delivery explained the success. Thus nations were entreated to replicate such cost-effective geographical access interventions in the delivery of other life course high impact MCH interventions discussed above (Gakidou et al 2007; Olorunsaiye 2015; Zere et al 2012; Russ et al, 2017; Gwatkin 2017).

Evidence adduced from primary and secondary data and literature in chapter five and discussions in the preceding sections of this chapter further affirms that equitable access to skilled MCH health provider services could impact MMR and NMR inequalities in Ghana more than education, income, occupation and other social determinants.

**Addressing causes of geographical HRH mal-distribution:**

Ghana like other LMICs has over the years grappled with serious shortfalls in the numbers and skill-mix of quality MCH and related skilled Providers. Even more serious is the mal-distribution problem. In particular, despite Ghana's focus on attaining universal health coverage by 2020; and reducing neonatal, child and maternal health outcome inequalities, the highly skewed Doctor and Midwife distribution in favor of GAR and AR remains a perennial challenge.

**Reforming Medical Education System**

Interviewees and focus groups and the primary survey data asserted that absence of strong and coherent HRH distribution and retention policy action is the fundamental cause. A major dimension of the weak policy is government's capacity to redistribute and increase Medical Education Facilities and resources in the three regions in the north. Medical Doctors in this study attest that health professionals are comfortable working within the geographical areas of their training. This means the yawning medical doctor inequity gap separating UWR and the AR and GAR would narrow if increasing numbers of doctors are being admitted into and

trained within the UWR settings. Net improvement in UWR's doctor density ratio is then likely faster than those of AR and GAR to even up the perennial regional variance over time. The argument is supported by the evidence from the decentralization of Midwifery Education system to all the ten regions of Ghana. There has been corresponding larger margin of net improvement in Midwife-WIFA density ratio in UWR, use of available Midwives and narrowing of neonatal and maternal mortality inequality gaps between the region and the AR and GAR.

Also, according to Dussault and Franceschini (2006); Kojo and colleagues (2018); Alam et al (2015), most of the strategies tried to prevent or reduce HRH mal-distribution focused on reforming the medical education system and creating necessary retention incentives. The approach attracted and retained health professionals in otherwise unattractive areas (Kojo and colleagues 2018; Alam et al 2015). Medical education system reform must also be holistic. Thus reformed Doctor and Midwife education systems integrate training, continuing education and service for success and sustainable impact on attraction and retention of doctors and midwives in otherwise unattractive areas to provide quality life course MCH services.

There is an attempt at the integration in Ghana. This includes the establishment of the Ghana College of Physicians and Surgeons' post-graduate Residency program for practicing doctors, the pre-College rural experience policy requirement and Specialists' Outreach Service to districts and communities policy directive. There are limitations that must be addressed if MCH Specialist density in UWR would improve at a rate that could impact narrowing of neonatal and maternal outcome inequalities.

First, there must be a special College admission quota for eligible doctors in UWR and sister regions in the north. Sponsorship for their training is also required for the quota intervention

to be effective. This then increases their opportunities to have post-graduate medical education, a major determinant of young doctors practice location (Dussault and Franceschini 2006; Kojo and colleagues 2018) in Ghana and other LMICs. The residency training and service delivery components of the integrated program are thus located within the UWR setting thereby enhancing their attraction and retention chances after completion of the training. Young medical doctors in this study alluded to the power of attraction of the intervention for newly qualified young doctors in Ghana. Health Professionals in the study have attested to the College fee being a financial barrier to increasing Specialist density in UWR in that they are unable to pay on their own. Where, due to internally generated fund revenue budget constraint (poverty levels in the region and erratic National Health Insurance claims payments) their Facilities are also unable to sponsor them, they get de-motivated and move to a southern Facility ready to offer sponsorship. It could thus be argued that a selective fee waiver policy intervention by Government could plausibly even up the high priority MCH Specialist gap in the UWR and sister regions in the north and contribute towards MCH inequality reduction. Indeed, in the early years of the College existence, Medical Education was free for all regions. The Regulator, in this case the Ghana Medical and Dental Council, must also support the retention of these doctors in the sponsoring region by ensuring that only doctors who fulfill their obligations towards the said regions are licensed or have their licenses renewed to practice. Further, in the pilot study to this research in the Upper East Region, doctors expressed deep frustrations over the lack of college admission quota for them (even after passing entrance exams) despite the several constraining circumstances confronting them, unlike their counterparts in the south. In summary, it is thus easier to change the recruitment criteria at a medical school to alter the profile of future doctors than to change the incentive system (Dussault and Franceschini 2006).

Second, lone doctor and lack of Specialists situations in District Hospitals in UWR over the years further limits the availability of doctors for training in this setting. This in turn is due to the universal salary policy which does not compensate the doctor in UWR for lacking additional income from locum and private practice, good career and education (for self, children and spouses), and life-style social amenities opportunities. These privileges, workload-related and several other advantages that their southern counterparts enjoy largely influence practice location (Dussault and Franceschini 2006; Manzi et al 2012; Adams 1999; Kojo and colleagues 2018) in Ghana.

Lack of basic amenities, poor living conditions, inadequate infrastructure and poor career support were among reasons why primary health workers in Nigeria refuse rural practice locations (Lawan, Amole and Khayi 2017). WHO (2010) and other studies on health care professionals' retention in remote areas have also shown career-related education programs; compulsory rural service programs; financial incentives, and personal and professional support services initiatives can be important.

District hospitals and to an extent the Regional Hospital in UWR and sister regions without Specialists are thus not credentialed by the Regulator as Training Centres for House Officers that would have then served to attract and retain newly qualified doctors. This condition also serves to meet the annual doctor needs of UWR for its integrated training, education and service delivery program.

Third, using the appropriate educational tools and interventions to attract and retain skilled MCH Providers in rural and underserved areas is under-explored. The use of available ICT resources to promote tele-consulting/telemedicine practice as clinical support and continuing professional development systems for skilled MCH Providers at deprived district and sub-district levels has been non-existent. By this technology, CHOs and other Providers at CHPS

and Health Centre levels can call to a Tele-Consultation Centre (TCC) and get connected for help from a Midwife, Doctor or Specialist to prevent casualties and deaths due to physical absence of these skilled Providers. This high impact life course MCH and general health care intervention is now at pilot stage in a few districts in Ghana as part of strategies to achieve UHC and reduce MCH inequalities in particular.

**Integrated incentive system**

A combination of financial and non-financial incentive packages has been shown to attract and retain health professionals in otherwise unattractive geographical areas (Dovlo, 2007; Kojo and colleagues 2018; Gupta et al 2011). In this study, both interviewees and focus groups assert that both financial and non-financial incentives are powerful interventions if Doctors, Midwives and other skilled health providers would be attracted and retained to serve UWR and similar deprived, rural and remote areas in Ghana. As indicated above, opportunities to earn additional income through locum and private practice and employment or job security for spouse strongly influence Doctors' practice location decision. The power of financial incentives, doctors' quest for better remuneration and the need to address public-private brain drain informed Ghana's decision to allow after working hours private practice (Adams 1999). The intervention most likely contributed to widen the MCH equity gap between doctors in UWR and counterparts in AR and GAR as UWR lacks the facilities and opportunities for private practice and locum.

Service quality concerns have also been raised. The financial unattractiveness of the UWR in this respect (due to high poverty levels) is frequently cited as a major reason for the perennial refusal of Doctors to accept job placements in the region. Low incomes of populations in rural Brazil also discouraged settlement of doctors in these regions (Machado 1997). Van Lerberghe et al (2002) thus concluded that the inadequate socioeconomic development of

rural and deprived areas compared to urban areas is ultimately the main constraint to achieving a balanced distribution of HRH. Negotiated financial incentive packages also contributed to the success of UWR in improving geographical equity in skilled MCH Providers and corresponding suggested narrowing of neonatal and institutional maternal mortality inequality gap between the region and the AR and GAR.

Medical Doctors, Midwives, Nurses, Trade Unions and Policy/Law-makers in this study have strongly advocated for a differential compensation or pay structure, as opposed to the universal salary policy hitherto implemented. For example, Trade Unions in the Health Sector have frequently embarked on industrial actions to press home their demand for better pay, payment of various monetary allowances and related conditions of Service. This is indicative of poor salaries for most public sector jobs. According to Chomitz et al (1998), Machado (1997) and Ferrinho & Van Lerberghe (2000), low remuneration for public sector doctors account for public-private sector brain-drain and refusal of doctors to locate practice in deprived regions.

Government has also not been bold enough to repackage and reintroduce the one time deprived area allowance to help augment income of Doctors and Midwives serving in public health facilities in UWR and similar areas. Interviewees and focus groups in this study attested that the intervention was effective in motivating staff to stay in such areas but unfortunately was withdrawn shortly after its introduction. Thus, without a differential pay package to bridge the remuneration equity gap, Doctors, Midwives and other skilled MCH Providers would always find UWR unattractive.

Lack of financial incentives for Service Providers in unattractive locations could tempt them to create perverse incentives which costs are passed onto the clients with the attendant financial barriers to quality life course MCH services. Frontline health staff in the focus

groups lamented that sometimes, for lack of incentives and even in some situations refund of genuine claims like duty performance-related travelling and transport (T & T) expenses to staff, they do create perverse financial incentives to make up. Lack of decentralization and the failure of Resource Allocators to make funds available at the operational level (district, sub-district or facility) especially deprived communities are cited as some reasons. Also, having to cover distant villages with the services all alone due to staff shortage; and without any differential financial incentive from the employer, aside the normal salary is another reason they assign for their actions.

Further, legislators and other study respondents in chapter five of this thesis cited payment of trainee allowance by Government to Public Sector Health Trainees as accounting for the pre-service HRH production policy implementation success. Such is the power of this financial incentive in attracting the youth into Midwifery and Nursing Schools and thus bridging the geographical inequality gap in MCH between the UWR and the AR and GAR. Restoration of the then scrapped trainee allowance was, anecdotally, a major political campaign promise in 2016 of the New Patriotic Party, then in opposition, that contributed to bring the party into power in January 2017. Actual restoration of the allowance in 2017 by the President Akuffo Addo's Government was also hailed and popularized by Nurse Trainees, their parents/guardians and other stakeholders.

Financial incentives alone are usually insufficient to ensure that deprived and remote areas are and remain adequately staffed (Dovlo 2007; Dussault and Franceschini 2006; Gupta et al 2011; Serneels et al 2007; kojo and colleagues 2018). Inadequate and poor state of health infrastructure and equipment and general lack of social amenities are disincentives to skilled MCH Providers, particularly Doctors to work in UWR.

Thus, poverty and deprivation as barriers to accessing quality health care resource could still be linked to human resource inequities. In particular, the maternal and newborn health inequality is largely due to the pregnant women's financial inability to transport themselves, often over long travel distance, to the nearest appropriate health facility or skilled MCH Provider to receive life course high-impact MCH interventions and services. Antenatal care, early treatment of pregnancy related complications, skilled attendant delivery, maternal emergencies and postnatal and newborn care are thus missed opportunities. They, without choice, then resort to traditional health practices like use of various herbal preparations during pregnancy and TBAs at delivery. The consequential dangers and high risk to both mother and the newborn thus translate into the relatively higher maternal and newborn mortality rates in the northern regions compared to the southern regions.

Investment in necessary health infrastructure and social amenities and incentive systems are central level strategies pursued by Government (Adam 1999). The decentralized Midwifery and Nursing Training Schools to UWR is a major move in the right direction. But that alone would not realize the full MCH HRH production policy benefits if its implementation is not strengthened with appropriate local incentive support systems. First, for quality practical teaching and learning, the technical functionality of the hospitals, Health Centres and CHPS Compounds in terms of physical infrastructure, essential equipment and skilled Service Providers is a pre-condition. This is because these are both field training sites and future service delivery points for the trainees. Unfortunately, vast majority of these facilities are improvised rather than planned constructed to fit purpose and therefore in poor functional shape. According to Gwatkin (2017) inequalities in MCH service accessibility, coverage and quality remain major limitations in LMIC's health care systems. Thus, necessary public investment in health infrastructure, medical equipment and skilled health providers is a major non-financial incentive to attract and retain skilled MCH Providers in UWR and sister

regions in the north. Improving quality of health infrastructure, medical technology and HRH in turn calls for effective advocacy, collaboration and engagement between the Ministry of Health Ghana and major MCH stakeholders. These include but not limited to the Ministry of Finance, Parliament, the Ministry of Local Government, NGOs, communities and Development Partners.

According to Adam (1999) and Dussault and Franceschini (2006) this integrated approach is most likely to produce desired attraction and retention results since a number of the incentive interventions lay beyond the direct core mandate of the health sector. The caveat, however, is the capacity to reconcile different expectations from the stakeholders and achieve common grounds and consensus (Kingdon 2011, 2015; Buck & Maguire 2015). Egger and Adams (1998), Dussault and Dubois (2003), Buck and Maguire (2015) and Kingdon (2011) cite active involvement of the key actors in the policy formulation and implementations processes as an outstanding crucial factor for policy success.

Second, there is need for training regions, particularly UWR and sister regions in the north, to practically retain one hundred percent of the Midwives and Nurses they train and turn out annually. Thirdly, for schools in the north, the School admission criteria should admit far more locally resident people than the applicants that are resident in the southern regions. An effective bonding system that ensures retention of the newly qualified Midwives and Nurses for a specified minimum number of years must form part of the School's admission criteria. This could significantly mitigate the political influence on admissions and high attrition of applicants and newly qualified Midwives and Nurses respectively in the north. This is because the length of time the policy or strategy remains on the national priority agenda and long-term political commitment are major determinants of policy success (Kingdon 2011 2015; Dussault and Franceschini, 2006). This incentive of release to a southern region after serving three minimum years in the north is nots being enforced effectively by both national

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and regional level authorities and thus deters rather than attract Doctors, Midwives and MCH Providers to UWR or north. Northern Regional Directors/authorities demand replacing staff from eligible Officers requesting for release while their southern counterparts accept and post professionals who refused posting to the north.

Another incentive for skilled MCH Providers to be attracted and retained in UWR is for the Ministry of Health to demystify the north among the southern populations, politicians and Medical, Midwifery and Nursing Schools in the south using multiple advocacy strategies including documentaries. For example, documentaries on available community support systems for doctors and Midwives working in rural and remote UWR, amenities like residential accommodation (with Local Government support), opportunities for post-graduate studies and appointment into Management positions could be useful in this respect.

Non-direct financial incentives such as promotion out-of-turn and out-of-turn study leave policies which reduce the mandatory years of service requirements of five and three years respectively by one year for staff working in the three regions in the north ought to be sustained. Doctors, Midwives and Nurses in this study have attested that some of them are still in the UWR because of these incentives. Inequities in terms of relative numbers practically enrolling into post-basic and post-graduate progammes annually are inevitable without additional controls to safeguard interest of staff in unattractive areas. For example, all post-graduate specialization programmes for Doctors, Midwives and Nurses are located in the south while most first degree programmes for same professions are similarly far more accessible to staff in the south than UWR.

For the study leave out-of-turn incentive to practically attract skilled MCH Providers to UWR, equitable annual regional study leave quotas for these programmes are essential. Staff policy education and transparency in study leave applicant selection criteria/system are

equally important if implementation would serve the policy purpose of HRH attraction and retention in underserved areas. Actively involving key stakeholders in the policy processes not only facilitates reconciliation of different perspectives for common grounds and consensus building, but also promotes concerted efforts for policy implementation success (Kingdon 2011, 2015; Buck and Maguire 2015).

In addition, where minimum service years are specified for health professionals serving in the north, they could be attracted there knowing that equal opportunity is given to all to serve in both deprived and endowed areas. Kojo and Colleagues (2018), Dovlo (2007), WHO (2010), Gupta et al (2011), Manzi et al (2012) and other rural staff attraction and retention studies found that respondents equally rated non-financial incentives high. For example, good opportunities for children and family education and self-career advancement are critical to doctors' practice location decisions.

**Decentralization of recruitment and Salary Budget**

In addition to the differential pay system referred to above, a decentralized personal emoluments budget to Regions and Budget and Management Centres (or Management Units) where vacancies exist for skilled Providers is strongly advocated. This is opposed to the hitherto centralized pay budget and the universal salary policy with serious limitations. These include over bloated salary budget (due to mal-distribution cost overruns), unattractiveness of deprived areas and large numbers of unemployed Midwives, Doctors and Nurses due to government's budgetary constraints. Dussault and Franceschini (2006), WHO (2010) and Kojo and colleagues (2018) assert that mal-distribution of HRH leads to avoidable overconcentration and underutilization of skilled HRH in urban areas and increased total health care system costs. These limitations could be addressed where skilled job seekers will follow job vacancy and pay budget locations.

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This in turn is made possible with a decentralized recruitment and pay budget system. Management Units are thus motivated, arguably, to rationally and efficiently manage their HRH budgets and make likely savings as opposed to cost overruns. Savings could then be expended on skilled MCH and related Providers' attraction and retention. Hitherto, the lack of commitment of the powers-that-be to enforcement of equitable distribution of skilled MCH Providers is a major limitation. For example, names of defaulters remain on government payroll and therefore an incentive to the perpetrators. No clearer mechanisms and commitment between the Ministry of Health and the Controller and Accountant General's Department to remove names of defaulters from the payroll to give budgetary place to those ready to accept postings to UWR and sister regions in the north. This is even more glaring with respect to the posting of Specialist Doctors who, with the notion of autonomy of practice and few numbers, tend to dictate their practice location.

A major policy intervention for a successful decentralized HRH budget is the implementation of Workload-Indicator Staffing Norms (WISN) (WHO 2010). By this HRH rationalization mechanism, Management Units are scientifically categorized into service volumes and the corresponding optimal HRH requirements by various job categories. Thus, a Management Unit would budget, recruit and pay for its HRH needs for quality life course MCH service delivery particularly at the primary level of care. This implies that Central Government only allocates monitors and evaluates Management Units' justified personal emoluments or salary budgets.

**Contribution of CHPS in reducing MCH coverage and outcome inequalities**

According to Dussault and Franceschini, (2006), Kojo and colleagues, (2018), Alam et al 2015, Nyonator et al (2005) and Bawa et al (2017), attraction and retention of skilled MCH Providers in otherwise unattractive geographical areas could be achieved and sustained using community-based Health Workers and new health cadres. The rational is to ensure

geographical accessibility, coverage and utilization of quality MCH and other essential life course primary health care services among disadvantaged populations or areas. Ghana's CHPS as discussed in the preceding sections is the hub of its health delivery system. It particularly focuses on deploying and integrating well trained CHOs into the community and cultural settings to deliver quality essential life course MCH services and resources in homes, outreach points and static CHPS Compound. CHOs provide emergency delivery services while linking up with Midwives assigned to the CHPS zone to ensure provision of focused antenatal care and normal deliveries. Midwives in turn plan with the nearest available doctor for deliveries by caesarean section. With the re-introduction of the Post-basic Midwifery Programme under the decentralized regional midwifery training school and train and retain system, the UWR is progressively increasing the geographical presence of Midwives in its remote and rural communities. This is because CHOs (certificate holders in Community Health Nursing) after serving for two years (post-first appointment) train and return to their communities as Midwives with Diploma qualification. The 2014 Ghana Demographic and Health Survey also adduce evidence that geographical accessibility to skilled attendant deliveries and other life course high impact MCH services improved due to increased utilization of the services of available Midwives (GSS, GHS and ICF International 2015). Thus CHPS close-to-client skilled MCH Provider services could plausibly partly explain the variances in the neonatal and institutional maternal mortalities and the suggested narrowing of the inequality gap between UWR and the AR and GAR.

**CHAPTER SEVEN- SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

**Introduction**

This chapter presents a summary of the study, main findings, conclusions, recommendations; and areas for further research.

**Summary of the Study**

The main objective of the study was to assess the contribution of human resource policy to reduction in health inequality in maternal and child health care between the Upper west region, and the Ashanti and Greater Accra regions. The study sought to answer the following questions:

1. What underlying factors account for the health outcomes inequality in maternal and child health care and others?

2. How do income, education and occupation factors contribute to the health inequality gap in maternal and child health care?

3. How does Ghana's human resource policy contribute to the health inequality gap in maternal and child health care?

4. What human resource policy implementation conditions and interventions bridge the inequality gap?

The study objectives were achieved using the Life Course Health Development (LCHD) theoretical approach to achieving reduction in maternal and child health inequalities while the Explanatory, Interaction and Action (EIA) approach to policy success guides policy actors' engagement for consensus and concerted action. The convergent mixed methods type of study design (integrating quantitative and qualitative methods, tools and techniques) was employed. Quantitative and qualitative data were collected concurrently in the three study regions covering two districts in each from September to December 2014. A census survey

was conducted of households' demographic, socio-economic, health services and health outcome characteristics; purposive sampling techniques were used to select key informants for the IDIs whilst separate FGDs were conducted among health professionals and health-related public service professionals; and health clients who by their background have rich experiences and knowledge of the Ghanaian health system including health inequalities between the three regions in the north and the southern sector. The research instruments used for data collection were interviewer administered survey questionnaire, IDIs and FGD guides. The census survey interviewed 1,478 household respondents; 11 respondents were interviewed using IDIs whilst 96 persons participated in the twelve (12) FGDs conducted (eight persons in each).

The researcher and 9 research assistants collected the data in the study. The quantitative data on the questionnaire were analyzed using the SPSS version 2.0. The chi-square test, hierarchical logistic regression and hierarchical negative binomial regression models were also used to further analyze the quantitative data. IDIs and FGDs data were however analyzed by clustering themes and sub-themes emerging from participants' responses and corresponding written narrative accounts. The qualitative data were used to complement the quantitative data in the discussion of the results.

**Summary of Main Findings**

In line with the main study objective, the study found that human resource for health policy action and interventions could significantly contribute to narrowing of the health outcomes inequality gap in relation to MMR and NMR between the three regions in the north and the southern sector of Ghana. Marginal improvement in doctor density and significant improvement in midwife density in the Upper West region through its innovative local HRH attraction and retention interventions narrowed the MCH accessibility and coverage

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inequality gap; with indicated narrowing in maternal and neonatal mortality gaps between the region and the southern counterparts of Ashanti and Greater Accra regions. Between 2008 and end of 2012, the proportion of the Upper West region's doctor density ratio to the national density had stagnated at 0.7% compared with 18% and 55% for the Ashanti and Greater Accra regions respectively. Within the same period, and using 2010 as the base year, while the iMMR of UWR worsened from 138 per 100,000 live births to 161 per 100,000 live births, those of AR and GAR regions had improved with 14% and 11% positive reduction respectively. However, between 2013 and 2014 the Upper West with its local innovative HRH interventions, complemented by Government's decentralization of Midwifery and Nursing Training schools to regions and train and retain policy support, recorded a 50% increase in its number of doctors compared with 9% and 19% margins in the AR and GAR respectively. At the same time, the UWR recorded wider net improvement margin of 17% positive reduction in its maternal mortality rates than the 8% and 7% reduction margins for the AR and GAR respectively; and 40%, 26% and 14% net improvement margins in neonatal mortality reduction for the UWR, AR and GAR respectively thus suggesting a narrowing of the maternal and newborn health outcomes gaps between the two sectors.

With regards to research question one, the study found that social determinants of health inequality and their distribution processes and effects explain the significant health outcomes inequality gap between the three regions in the north and the southern sector of Ghana. Thus, income poverty, education and culture, occupation, and MCH care access factors together account for the health differences between the two geographical areas. The distribution of these economic, social amenities and skilled MCH Provider services and resources between the UWR and the AR and GAR has perennially been inequitable underscored by public policy actions and intervention processes that are not, in practice, driven by equity value position. Deprivation in these resources operates to render UWR unattractive to skilled MCH

and related Providers which in turn increases the susceptibility of its population to natural disasters, diseases and health-damaging attitudes and practices. The region (UWR)'s corresponding health outcomes are thus poorest compared to the AR and GAR.

In the case of research question two, the study found that income, education and occupational class resources are concentrated in the AR and GAR resulting in high poverty and migration rates and poor infrastructure in the UWR. The lack of commitment of the state to appropriate investments targeted at bridging the resource gap in these sectors in the UWR has left the region unattractive to the average Ghanaian and thus encouraged the highest migration of its population to the GAR and AR. This in turn continues to leave the region under-developed and its population poorest with poor geographical accessibility to quality life course high-impact MCH services and resources thus increasing their susceptibility to natural disaster, diseases and health- damaging attitudes and practices and resulting in poorer health outcomes. However, though income, education and occupation yielded negative coefficients in the hierarchical logistic regression which imply their negative relationship with incidence of neonatal deaths, such variables were not significant thus -0.72, -0.83 and -1.45 for respondents' income, education and occupation respectively.

In relation to total neonatal deaths per reproductive age woman, women with formal education and occupation are more likely to have lower neonatal deaths than women without formal education and occupation signified by ORR of -3.83 and -3.00 for education and occupation respectively. In the case of regional variation, women in the Upper West Region are more likely to record higher number of neonatal deaths compared to those from the Ashanti (ORR = -3.14) and Greater Accra (ORR = -2.70) regions. The 2014 Ghana Demographic and Health survey report however found no difference and sometimes even better maternal and child health outcomes among women without secondary education compared to women with secondary or higher education. Besides, IDI and FGD participants

rated income, education and occupation, among others, in relation to MMR and NMR, lower than geographical accessibility to quality life course high-impact MCH care by skilled health professionals as explaining the causes of health inequality between the three regions in the north and the southern sector of Ghana.

In relation to research question three, the study found that unlike income, education and occupation, geographical access to MCH care by skilled health professionals significantly explained the incidence of neonatal mortality among reproductive age women signified by negative coefficients of -1.96, -2.45, and -2.72 for access to delivery, ANC and PNC services respectively. It was also significant in explaining the frequency of neonatal deaths per reproductive age woman. In addition, the synthesized secondary data and the 2014 Ghana Demographic and Health Survey affirmed that improved geographical access to services of doctors, midwives and other trained health professionals reduce the regional variations in neonatal and maternal mortalities between the two geographical divides; and between urban and rural areas, the rich and the poor. Thus, in relation to MMR, the UWR recorded wider net improvement margin of 17% positive reduction in its MMR than the 8% and 7% reduction margins for the AR and GAR respectively.

IDI and FGD participants further emphasized that access to life course high-impact MCH care by skilled health professionals in UWR could be more important and significant for reduction in MCH outcomes inequalities between the two geographical areas signaled by its 6.5 out 10 rating. This also means a 3.5 out of 10 rating for the rest of the non-direct health care factors including income, education, and occupation.

 Finally, for research question four the study found that the following pre-conditions must be met if sustainable reduction in MCH outcomes inequalities would be achieved. They are: equitable placement of the required numbers, quality and mix of qualified MCH care and

related Providers in the two geographical divides, thus increased geographical presence and utilization of skilled MCH Providers' life course high-impact MCH services at a higher rate in UWR than AR and GAR ; effective all-inclusive health stakeholder engagement and consensus building in health policy processes; consistency and relevance of health policy actions to local contextual issues; creating a positive public image of the three regions in the north; accelerated investment in targeted development projects and programs in the three regions in the north to create attractive working and living conditions; commitment and accountability of political leadership and other stakeholders to the very equity value position and enforcement of the policies and laws that help achieve MCH inequality reduction; and policy decisions and actions are premised on scientific evidence-base or research.

The following cost-effective human resource for health and related policy interventions could then help achieve sustainable reduction in MCH outcomes inequalities between the north and south:

- Use of workload-indicator staffing norms and health equity service targets to establish gaps in required numbers, skill-mix and quality of health care provider complement at the various levels of health delivery; and project annual needs of each region accordingly

- Decentralize integrated Medical, Midwifery and Nursing educational systems to UWR and sister unattractive regions to facilitate localization of training and practice setting and increased retention rates among these MCH cadres

- Produce and retain health cadres policy strengthened with effective trainee selection and bonding administration system and all driven by the local district authorities of each region

- Use of differential employee compensation mechanisms to attract and retain health sector and health-related professionals in the three regions in the north to deliver equitable life-course public health care, particularly MCH to their populations

- Decentralized systems of employee compensation budget disbursement, recruitment and placement and related public administration functions to regional and district local authorities

- Sustained investment in deployment and expansion in health facilities especially CHPS Compounds, essential quality medical equipment or technology, staff housing and related social amenities and other infrastructure as essential non-financial incentives to enhance attractiveness of the three regions in the north to skilled MCH Providers

- Regular informed health stakeholder consensus building forums on practical solutions to the human resource and health equality policy issues; concretize intervention implementation plan, monitoring and evaluation plan; and health outcome inequality reduction trend reporting and action

## Limitations of the Study

For time, space and resources the study could not look at other health indicators, apart from the maternal and neonatal mortalities, in testing the study hypothesis and answering the research question. These can be considered alongside further research areas proposed in this study.

## Conclusions

In line with the summary of results of the study, the following conclusions were drawn:

- The study concluded that health outcomes inequalities between the three regions in the north and the southern sector of Ghana are statistically significant and persisting

thus the Upper west region has poorest neonatal and institutional maternal mortalities compared to the Ashanti and Greater Accra regions in the south

- It was noted that the bulk of the causes of the health outcomes inequalities are attributed to the combined influence of inequities in the distribution and services of skilled health care providers, education, income and occupation and other related social determinants of health inequality; thus these render the north deprived and unattractive and increase the susceptibility of their populations to natural disasters, disease and other health-damaging conditions with the consequential poorer health outcomes

- Again income, formal educational attainment and occupation though important appeared statistically insignificant contributors to incidence of neonatal mortality inequality; and less significant contributors to the frequency of neonatal deaths per reproductive age woman compared to the contribution of geographical access to skilled health care providers of antenatal, delivery and postnatal services

- In addition, informed local content cost-effective human resource policy action and interventions implemented with, through and by duly empowered local regional, district and community authorities could reduce the MCH outcomes inequality gaps between the three regions in the north and the southern sector by making geographical access to evidence-based life-course high-impact public health care more equitable

- Furthermore, the successful implementation of the informed cost-effective human resource policy interventions for sustainable reduction in MCH outcomes inequality would depend on certain key implementation pre-conditions such as commitment to the equity value position, effective decentralization; all-health stakeholder inclusion in health policy processes and health research.

- The study also draws on an accumulated understanding of health inequalities that where health stakeholders act in concert, it may be possible practically to avoid policy implementation failures and help reduce health outcome inequality between the north and south; this is because obtaining good evidence on the relative contribution of the determinants of health inequalities remain a challenge (Kindig and McGinnis 2007).

**Recommendations**

Based on the findings of the study, the following recommendations were made:

- The Ministry of Health and health-related sector ministries should complete and use the workload-based staffing norms and their respective health equity service targets to establish the gaps in required numbers, skill-mix and quality of health care provider complement at all levels of health delivery; and project annual needs of each region to guide HRH planning, production and management

- The Ministry of Health should promote decentralized integrated Medical, Midwifery and Nursing educational systems to UWR and sister unattractive regions to facilitate localization of training and practice setting and increased retention rates among these MCH cadres

- The Ministry of Health should promote non-interference of political and central level authorities in the effective enforcement of the produce and retain health cadres policy; strengthened with effective trainee selection and bonding administration system and all driven by the local district authorities of each region

- The Ministry of Finance should use differential compensation mechanisms to attract and retain required health sector and health-related professionals in the three regions of the north to deliver equitable life-course public health care, particularly MCH, to

their populations at all the levels of health care delivery particularly the community, sub-district and district levels

- The Ministry of Finance should properly decentralize the systems of employee compensation budget disbursement, staff recruitment and placement and related public administration functions to regional and district local authorities

- The Ministry of Finance should mobilize and allocate resources for sustained investment in deployment and expansion in health facilities, essential quality medical technology, staff housing and related social amenities and other infrastructure as essential non-financial incentives to enhance attractiveness of the three regions in the north

- The Ministry of Health should institutionalize Health Inequality Monitoring Unit; well-resourced with renowned expert public health specialists and researchers to develop good public health evidence base for well-informed policy decisions and action.

**Areas for Further Research**

- A further study is needed to monitor future trends in health outcome inequalities between the three regions in the north and the southern regions in response to shifts in their respective HRH density ratios

- Further study is required to monitor the root causes of new trends in distribution of health outcomes between the two geographical areas

- Comparative further research is needed on distribution of health outcomes among the Dagaaba, Akan and Ga ethnic groups domicile in an endowed region of Ghana

- Comparative further research is needed on distribution of health outcomes among the Dagaaba, Akan and Ga ethnic groups domicile in a deprived region of Ghana.

# Annexes

**Table 5.2: Health differences between the three regions in the north and southern regions of Ghana could plausibly narrow with increase in density of Skilled HRH in the north- Chi-Square Test Results**

| VARIABLE | REGION | | | Chi-square value | df | p-value |
|---|---|---|---|---|---|---|
| | UWR | AR | GAR | | | |
| 1.DEMOGRAPHIC BACKGROUND | | | | | | |
| Study sample | 292 | 357 | 851 | 0.1412927 | 2 | 0.932 |
| Total respondents | 289 | 342 | 847 | | | |
| **Location Accessibility:** | | | | | | |
| **1**.Hard to reach locations | 224 | 256 | 30 | 498.796 | 2 | 0.000 |
| **2**. Easy to reach | 65 | 74 | 817 | | | |
| **Respondent Sex:** | | | | 34.252 | 2 | 0.000 |
| 1**.** Female (870) | 157 | 150 | 563 | | | |
| **2.** Male (608) | 132 | 192 | 284 | | | |
| | | | | | | |
| **Ethnicity:** **1**.Dagaare/Wala ethnicity (323) | 279 | 14 | 30 | 967.572 | 4 | 0.000 |
| **2.**Akan ethnicity (703) | 0 | 295 | 408 | | | |
| **3.**Ga ethnicity (236) | 10 | 7 | 236 | | | |
| | | | | | | |
| 2. SOCIO-ECONOMIC FACTORS: | | | | | | |
| **Drinking water source:** **1.** Safe water | 285 | 289 | 795 | 48.213 | 2 | 0.000 |
| **2.** Unsafe | 4 | 53 | 52 | | | |
| **Income earning status:** **1.** Earning | 244 | 282 | 820 | **109.901** | 2 | 0.000 |
| **2.** Not Earning | 118 | 192 | 80 | | | |
| **Educational Status:** **1.** Higher formal education | 19 | 70 | 286 | 58.277 | 2 | 0.000 |
| **2.**No higher formal education | 270 | 272 | 561 | | | |
| **Occupation:** **1.**Civil/public servant/ company employee | 38 | 36 | 283 | 206.952 | 2 | 0.000 |
| **2.**Artisan/ sellers | 156 | 105 | 482 | | | |
| **3.**Farming | 50 | 141 | 55 | | | |
| **Sanitation:** **1.**Safe toilet facilities | 76 | 104 | 616 | 163.982 | 2 | 0.000 |
| **2.**Unsafe toilet facilities | 213 | 238 | 231 | | | |
| **Owner of Cars:** **1**.Own car | 20 | 80 | 323 | 71.187 | 2 | 0.000 |
| **2**.Don't own car | 269 | 262 | 524 | | | |
| | | | | | | |
| 3.RESPONDENTS' HEALTH CARE ACCESS | | | | | | |
| 3a.**Socio-economic enablers for health care access:** **1.**Use **car** | 20 | 80 | 323 | 194.159 | 6 | 0.000 |

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| | | | | | | |
|---|---|---|---|---|---|---|
| **2.** Use **m-phone** | 71 | 71 | 410 | | | |
| **3.** Use **media** | 264 | 185 | 1,306 | | | |
| **4.** Use **NHI** cover | 1,112 | 1,126 | 2,884 | | | |
| 3B.<br>**Access to Doctors and Midwives- related high impact services** | | | | | | |
| **Households accepting family planning(FP) service :**<br>Total Female Respondents | | | | | | |
| **1.** FP acceptors | 122 | 73 | 288 | 194.159 | 6 | 0.000 |
| **2.**Non FP acceptors | 35 | 77 | 275 | | | |
| | | | | | | |
| **FP Service Provider**<br>**1.**Doctor | 21 | 75 | 182 | 178.310 | 4 | 0.000 |
| **2.**Midwife | 65 | 90 | 275 | | | |
| **3.**Others | 36 | 0 | 0 | | | |
| | | | | | | |
| **Antenatal Care** (**ANC**):<br>Total ANC Registrants | | | | | | |
| **1.**First trimester ANC visits | 130 | 96 | 419 | 2.281 | 2 | 0.320 |
| **2.**Non first trimester ANC | 29 | 33 | 114 | | | |
| | | | | | | |
| **Four Plus ANC:**<br>**1.** Four plus (4+) ANC visits | 101 | 72 | 418 | 22.376 | 2 | 0.000 |
| **2.**Non-four plus(4+) ANC | 58 | 57 | 115 | | | |
| | | | | | | |
| **ANC Provider:**<br>**1**.Doctor | 21 | 75 | 182 | 133.214 | 4 | 0.000 |
| **2**.Midwife | 65 | 90 | 275 | | | |
| **3**.Others | 73 | 0 | 76 | | | |
| | | | | | | |
| **Skilled Attendant Deliveries** | | | | | | |
| **1.** Doctor attendant | 21 | 75 | 182 | 82.560 | 4 | 0.000 |
| **2.**Midwife attendant | 65 | 75 | 182 | | | |
| **3.**Unskilled attendants | 58 | 0 | 128 | | | |
| | | | | | | |
| **Pre-delivery Access to Doctor/Midwife Phone for labor onset :**<br>**1.**Given access to | 60 | 50 | 160 | 3.710 | 2 | 0.156 |
| **2.**Without access | 99 | 79 | 373 | | | |
| | | | | | | |
| **Post Delivery care**<br>**1.**Pre-discharge health check at birth | 84 | 66 | 74 | 55.974 | 2 | 0.000 |
| **2.**Without pre-discharge check | 58 | 0 | 128 | | | |
| **First week Health Check:**<br>**1.**Babies with first week health checks | 7 | 17 | 216 | 63.853 | 2 | 0.000 |
| **2.** Babies without first week health check | 137 | 97 | 277 | | | |
| **First week Health Check (Mother &Baby):**<br>**1.** Mother & baby with first week check | 43 | 88 | 454 | 198.967 | 2 | 0.000 |
| **2.** Mother & Baby without health check | 105 | 26 | 39 | | | |
| **First week Health Check:** | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| **1.**Doctor provider | 21 | 75 | 182 | 143.782 | 4 | 0.000 |
| **2.**Midwife provider | 65 | 90 | 275 | | | |
| **3.**Other Provider | 58 | 0 | 36 | | | |
| | | | | | | |
| RESPONDENTS HEALTH OUTCOMES | | | | | | |
| **Household deaths in past 10yrs:**<br>**1.**Household **without** deaths | 67 | 107 | 342 | **29.110** | 6 | 0.000 |
| **2.**Households **with** deaths | 222 | 235 | 505 | | | |
| **3.**Total deaths | 73 | 103 | 174 | | | |
| **4.**Institutional maternal mortality (2014) | 161/100,000 | 115/100,000 | 185/100,000 | | | |
| **5.**Neonatal deaths | 34 | 21 | 120 | | | |
| **6.**Still births | 30 | 25 | 231 | | | |
| | | | | | | |
| **Skilled Staff Strength (2012):**<br>**1.**Doctors | 16 | 513 | 1004 | 105.693 | 2 | 0.000 |
| **2.** Midwives | 131 | 779 | 812 | | | |
| | | | | | | |

**Table 5.3: A hierarchical logistic regression results on predictors of household's neonatal deaths**

| | Model I | | | Model II | | | Model III | | |
|---|---|---|---|---|---|---|---|---|---|
| | ORR | P>\|z\| | [95% CI] | ORR | P>\|z\| | [95% CI] | ORR | P>\|z\| | [95% CI] |
| Constant | 0.02 | -3.09** | 0.01;0.23 | 0.09 | -9.77* | 0.06,0.15 | 0.001 | -2.56** | 4.15;0.19 |
| Region<br> Upper West<br>Region (ref.cat) | | | | | | | | | |
| Ashanti Region | -6.45 | -1.58 | 0.64;65.10 | | | | -0.09 | -1.41 | 0.00;2.52 |
| Greater Region | -5.68 | -1.52 | 0.60; 53.06 | | | | -1.09 | -0.52 | 0.19,16.8 |
| Location<br> Easy to reach<br>(ref.cat) | | | | | | | | | |
| Hard to reach | 1.65 | 1.03 | 0.63;4.29 | | | | 2.10 | 0.82 | 0.35;12.3 |
| Income<br> Not-Cash (ref.cat) | | | | | | | | | |
| Cash | -0.46 | -1.26 | 0.14;1.53 | | | | -2.10 | -0.72 | 0.27;15.9 |
| Education<br> Uneducated<br>(ref.cat) | | | | | | | | | |
| Educated | -0.46 | -2.34** | 0.24;0.88 | | | | -1.44 | -0.83 | 0.46;4.50 |
| Occupation | | | | | | | | | |
| Unemployed(ref.cat) | | | | | | | | | |
| Employed | -2.57 | - | 1.17;5.65 | | | | -2.98 | -1.45 | 0.68;13.0 |

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| | Model I | | | Model II | | | Model III | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 2.35** | | | | | | | 3 |
| Radio | | | | | | | | | |
| Inaccessible (ref.cat) | | | | | | | | | |
| Accessible | 1.03 | 0.08 | 0.46;2.32 | | | | 0.74 | -0.43 | 0.19;2.84 |
| Television | | | | | | | | | |
| Inaccessible (ref.cat) | | | | | | | | | |
| Accessible | 0.46 | -2.26* | 0.23;0.90 | | | | 0.98 | -0.01 | 0.22;4.26 |
| Mobile phone | | | | | | | | | |
| Inaccessible(ref.cat) | | | | | | | | | |
| Accessible | 1.34 | 0.38 | 0.29;6.23 | | | | 2.11 | 0.67 | 0.23;19.34 |
| Access delivery | | | | | | | | | |
| Inaccessible (ref.cat) | | | | | | | | | |
| Accessible | | | | -0.36 | -2.28* | 0.15;0.86 | -1.70 | -2.82** | 0.47;6.15 |
| Access ANC | | | | | | | | | |
| Inaccessible (ref.cat) | | | | | | | | | |
| Accessible | | | | -4.89 | -3.62** | 2.07;11.57 | -11.8 | 3.61** | 3.09;45.08 |
| Access PNC | | | | | | | | | |
| Inaccessible (ref.cat) | | | | | | | | | |
| Accessible | | | | -1.29 | -0.71 | 0.63;2.64 | -0.59 | -0.72 | 0.14; 2.41 |
| $R^2=$ | 0.078** | | | 0.09** | | | 0.22** | | |
| Wald $X^2$ | 25.54 | | | 18.58 | | | 40.78 | | |

*p≤ 0.05; ** p <0.01    Source: Field work, 2014

**Table 5.4: A hierarchical negative binomial regression results on determinants of number of deaths (neonatal and miscarriages)**

| | Model I | | | Model II | | | Model III | | |
|---|---|---|---|---|---|---|---|---|---|
| | IRR | P>|z| | [95% CI] | IRR | P>|z| | [95% CI] | IRR | P>|z| | [95% CI] |
| Constant | 0.36 | 0.77 | -1.24, -0.01 | 0.23 | 0.67 | -0.44,0.90 | 0.07 | 0.24 | -0.53;0.68 |
| Region Upper West | | | | | | | | | |
| Region (ref.cat) | | | | | | | | | |
| Ashanti Region | -0.62 | -4.04** | 0.92;0.322 | | | | -0.53 | -3.14** | -0.87;-0.20 |

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| | Coef | t | 95% CI | Coef | t | 95% CI | Coef | t | 95% CI |
|---|---|---|---|---|---|---|---|---|---|
| Greater Region | -0.11 | -0.95 | -0.34;0.12 | | | | -0.12 | -2.70** | -0.21;0.45 |
| **Location** | | | | | | | | | |
| Easy to reach(ref. (ref.cat) | | | | | | | | | |
| Hard to reach | 0.03 | 0.49 | -0.08;0.15 | | | | 0.10 | 0.87 | -0.12;0.33 |
| **Income** | | | | | | | | | |
| Not-Cash(ref.cat) | | | | | | | | | |
| Cash | -0.68 | -9.25** | 0.54;0.83 | | | | -0.33 | -1.64 | -0.06; 0.74 |
| **Education** | | | | | | | | | |
| Uneducated (ref.cat) | | | | | | | | | |
| Educated | -0.48 | -8.10** | -0.60;-0.37 | | | | -0.43 | -3.83** | -0.66; -0.21 |
| **Occupation** | | | | | | | | | |
| Unemployed(ref.cat) | | | | | | | | | |
| Employed | -0.44 | -6.15** | 0.30;0.58 | | | | -0.42 | -3.00** | 0.14; 0.69 |
| **Radio** | | | | | | | | | |
| Inaccessible (ref.cat) | | | | | | | | | |
| Accessible | 0.17 | 2.89** | 0.05;0.28 | | | | 0.26 | 3.12** | 0.09;0.43 |
| **Television** | | | | | | | | | |
| Inaccessible(ref.cat) | | | | | | | | | |
| Accessible | -0.28 | -5.32** | -0.38,-0.17 | | | | -0.18 | -1.50 | -0.41; 0.05 |
| **Mobile phone** | | | | | | | | | |
| Inaccessible(ref.cat) | | | | | | | | | |
| Accessible | 0.19 | 1.69 | -0.03,0.42 | | | | -0.01 | -0.04 | -0.48; 0.45 |
| **Access delivery** | | | | | | | | | |
| Inaccessible (ref.cat) | | | | | | | | | |
| Accessible | | | | -0.21 | -1.34 | -0.09,0.51 | -0.15 | -1.96* | -0.01; 0.31 |
| **Access ANC** | | | | | | | | | |
| Inaccessible (ref.cat) | | | | | | | | | |
| Accessible | | | | -0.01 | -0.05 | -0.34,0.33 | -0.166 | -2.45** | -0.29; -0.03 |
| **Access PNC** | | | | | | | | | |
| Inaccessible (ref.cat) | | | | | | | | | |
| Accessible | | | | -0.08 | -0.50 | -0.25,0.44 | -0.17 | -2.72** | 0.05; 0.30 |
| R²= | 0.06 | | | | 0.07 | | | 0.12 | |
| LR chi2(9) | 30.48 | | | | 19.99 | | | 32.95 | |

*p≤ 0.05; ** p <0.01     Source: Field work, 2014

**Table 5.7: Trend in Doctor Density by Region: 2008-2014**

| Region/Doctor /Year | Doctors | | | | | | | | Source |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | UWR | % | AR | % | GAR | % | Ghana | % | MOH 2014 Holistic Assessment Report |
| 2014 | 21 | 0.7 | 541 | 18 | 1,651 | 55 | 3016 | 100 | |
| 2013 | 14 | 0.5 | 493 | 19 | 1383 | 53 | 2615 | 100 | |
| 2012 | 16 | 0.7 | 513 | 23 | 1,004 | 45 | 2252 | 100 | |
| 2011 | 17 | 0.7 | 624 | 26 | 1,068 | 44 | 2431 | 100 | |
| 2010 | 14 | 0.7 | 562 | 27 | 876 | 42 | 2108 | 100 | |
| 2009 | 17 (13) | 0.8 | 600 (699)+ | 29 | 839 (1107)+ | 40 | 2082 2640* | 100 | |

**\*including 695 Specialist Medical Practitioners and 405 private sector; +includes private sector**

**\*\* 50%, 9% and 19% net improvement margins for UWR, AR & GAR respectively between 2013 & 2014**

**Table 5.8: Trend in Midwife Density by Regions**

| Year/ Midwife | Regional Distribution of Midwives: 2008-2014 | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | UWR | % | AR | % | GAR | % | Ghana | % | Source |
| 2014 | 157 | | 766 | | 911 | | | | |
| 2013 | 120 | | 563 | | 898 | | | | |
| 2012 | 131 | | 779 | | 812 | | | | |
| 2011 | 147 | | 754 | | 833 | | | | |
| 2010 | 145 | | 630 | | 784 | | | | |
| 2009 | 153 | | 606 | | 792 | | 4929** | | |

**Source: MOH Holistic Assessment of 2012**

**Table 5.9: Percentage Assistance at Delivery by Provider Type by Region**

| Year/Provider /Coverage | 2014 | | | 2008 | | | Before 2008 | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Doctor | Midwife | Skilled | Doctor | Midwife | Skilled | Doctor | Midwife | Skilled |
| Greater Accra | 31.2 | 57.1 | 92.1 | 29.7 | 52.3 | 84.3 | 24.0 | 57.4 | 81 |
| Ashanti | 18.3 | 66.6 | 86.3 | 16.0 | 54.6 | 72.6 | 8.7 | 51.5 | 60.2 |
| Upper West | 4.9 | 40.8 | 63.7 | 6.8 | 32.6 | 46.1 | 3.4 | 29.9 | 33.3 |

**Source: Ghana 2011 MICS Report, UNICEF and GSS; Ghana 2014 DHS Report, GSS and GHS; Ghana 2003 DHS Report, GSS and NMIMR**

**Table 5.10: Trend in Regional Institutional Maternal Mortality (per 100,000Live Births)**

| Year/Mortality /Region | Institutional MMR per 100,000 Live Births | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | **UWR** | % | **AR** | % | **GAR** | % | **Ghana** | % |
| 2014 | 161 | | 115 | | 185 | | | 100 |
| 2013 | 193 | | 125 | | 198 | | | 100 |
| 2012 | 146 | | 77 | | 205 | | | 100 |
| 2011 | 127 | | 197 | | 242 | | | 100 |
| 2010 | 138 | | 152 | | 207 | | | 100 |
| 2009 | | | | | | | | |
| **Ghana** | **144** | | **155** | | **152** | | **174** | **164** |
| | | | | | | | | |

**Table 5.11: Regional Trend in Neonatal Mortality per 1000 live Births (2003-2014)**

| Region/NNM/Year | 10 years before 2008 | 2008 | 2011 | 2014 | Change |
|---|---|---|---|---|---|
| Greater Accra | 29 | 20 | 20 | 25 | 86% (14% reduction) |
| Ashanti | 57 | 27 | 27 | 42 | 74% (26% reduction) |
| Upper West | 62 | 41 | 41 | 37 | 60% (40% reduction) |
| Ghana | 43 | 32 | 32 | 29 | |

**Table 5.12: IDI Participants Perceived Rating of Health Inequality Causal Factors**

| No. | Participant | HR Rating | Other causal factors | Justification |
|---|---|---|---|---|
| 1 | MP- Amansie Central | 9/10 | 1/10 | Government responsibility |
| 2 | MP- Asante Akim Central | - | 5/10 & 5/10 | Financial access & Education; health & education are basic but may be neglected by people |
| 3 | Chairman- Parliamentary Select Committee on Health | 9/10 | 1/10 | -statistics<br>- observed persistent refusal of posting to the north<br>- poverty and deprivation of north |

| # | Participant | Rating 1 | Rating 2 | Remarks |
|---|---|---|---|---|
| 4 | National Union Leader & Medical Specialist | 7/10 | 3/10 | -persistent refusal of posting<br>- Government not bold on deprived area incentives<br>- unattractive amenities in the north |
| 5 | Representative District Director- Asante-Akim Central | 4/10 | 6/10 | -Social amenities and roads are key deterrents to staff accepting posting |
| 6 | District Director- Amansie Central | 6/10 | 4/10 | -basically other factors come back to STAFFING<br>- Human resource is the biggest |
| 7 | District Director- Nadowli | 7/18 | 3/10 | -Absence of effective HR distribution policy<br>- Lack of enforcement |
| 8. | District Director- Jirapa | 2/10 | 8/10 | -Regional Nursing training Schools are now improving (nursing) staffing in regions<br>- Illiteracy is a major barrier to service uptake and acceptability |
| 9 | Local Government Planning Officer | 4/10 | 6/10 | -A few doctors are in the north trying to cope with the situation<br>- if others would understand and accept postings there the situation will improve |
| 10 | Medical Practitioner- Tema | 8/10 | 2/10 | |
| 11 | Director- Human Resource (GHS) | 7-8/10 | 2-3/10 | -Health Education alone with Human Resource available can prevent many of the undesirable factors |
| | Average score rating (6.4/10) | 6.4/10 | 3.6/10 | Strong rating<br>-Single factor vrs. All others<br>- 10/11 respondents rated HR<br>- 11th respondent still acknowledges HR contribution |

**Table: 5.13 FGD Participants' Perceived Ratings of Health Inequality Causal Factors**

| participant | Education & Literacy | Perception (C&R) | Poverty (Fin.Econ). | Food & Nutrition | Social Amen. | Health Infrast. & Equipt. | HR & H/Services |
|---|---|---|---|---|---|---|---|
| Asante AC H.Prof. | 9/10 | 8-9/10 | 6/10 | | | | |
| Amansie C. H.Prof. | 2-6/10 | 3/10 | 4/10 | | | | |
| Nadowli | 5/10 | | | 8/10 | | | 5/10 |
| Jirapa H. Prof. | | | | | 4/10 | | 6-8/10 |
| Tema Metro. H. Prof. | 6-8/10 | | 7-9/10 | | | | 6-7/10 |

| Ada East H. Prof. | 2/10 | 8/10 | 2/10 | 3-6/10 |
| **Average** | | | | **6.5/10** |

## References

Abebrese, J, 2011. *Social protection in Ghana: An overview of existing programmes and their prospects and challenges.* Germany: : Friedrich-Ebert-Stiftung.

Ackah, C., & Medvedev, D., 2010. Internal Migration in Ghana: Determinants and welfare impacts. *Policy Research Working Paper,* p. 5273.

Adepoju, A, 2005. Migration in West Africa: A paper prepared for the policy analysis and research program of the Global Commission on International MigrationLegos, Nigeria. *Human Resources Development Centre,* 65(5), pp. 543-567.

Adua, E., Frimpong. K., Li, X., and Wang, W, 2017. Emerging issues in public health. *a perspective on Ghana's healthcare expenditure, policies and outcomes.,* p. 197–206.

Agyeman, K. K., Antwi, K. B., & ABANE, A. M., 2014. Social inclusion via conditional cash transfer in Ghana: An investigation into the livelihood empowerment against poverty program in Cape Coast Metropolis. *Ghana. Oguaa Journal of Social Sciences,* pp. 1 - 7 .

Ahlman, J.S., 2010. The Algerian Question in Nkrumah's Ghana, 1958-1960. *Debating "Violence" and "Nonviolence" in African Decolonisation. Africa Today; Volume , Number ,* 57(2010 ), pp. 67- 84.

Aidoo, T.M., 2005. The context and provenance of democratization in Ghana,. *1990-1992. HAOL; Num.9 (Invierno, 2006),* pp. 7-16.

Ajiferuke, I., & Famoye, F., 2015. Modeling count response variables in informetric studies: Comparison among count, linear, and lognormal regression models. *Journal of Informetrics, 9(3),* pp. 499-513.

Akmatov, M. M. R., 2012. Timeliness of childhood vaccinations in 31 low and middle-income countries. *J Epidemiol Community Health,* 8(3), pp. 34-56.

Alam N., Hajizadeh M., Dumont Alexandre, Fournier P, 2015. Inequalities in maternal health care utilization in sub-Saharan African countries : a multiyear and multi-country analysis. *Plos One,* 10((4), e0120922 [16 p.]. ISSN 1932-6203), pp. 1-3.

Alkenbrack, S., Hanson, K., Lindelow, M, 2015. Evasion of "mandatory" social health insurance for the formal sector: evidence from Lao PDR. *BMC Health Services Research,* 2015(15), p. 473.

Alleyne, G.AO., 2001. Equity and health. *Pan American Organization,* 76(1), p. 3–11.

Anaman, K.A, 2006. Determinants of Economic Growth in Ghana. *Institute of Economic Affairs,* 56(4), pp. 50-62.

Anon., 2014. Foundation., World Health Organization and Calouste Gulbenkian. Geneva, World Health Organization. *Social determinants of mental health,* 23(3), pp. 12-15.

Anon., 2011. Committee on Breast Cancer and the Environment, Institute of Medicine, (Available at: http://www.iom.edu/~/media/. *Breast cancer and the environment: A life course approach. Washington, DC; Institute of Medicine of the National Academy of Sciences,* 4(1), pp. 34-45.

Anon., 2011. Committee on Leading Health Indicators for Healthy People 2020.Leading Health Indicators for Healthy People 2020: Letter report. Washington, DC: Institute of Medicine of the National Academy of Sciences.. *Institute of Medicine,* 65(3), pp. 23-46.

Anon., 2013. World Health Organization Global vaccine action plan 2011–2020. Geneva: World Health Organization; 2013. *Available from: http://www.who.int/iris/bitstream/10665/78141/1/9789241504980_eng.pdf,* 6(2), pp. 23-18.

Anon., 2014. Ministry of Health, Ghana. *Holistic Assessment of Health Sector Programme of Work 2013,* 6(2), pp. 2-4.

Anon., 2015. Canadian Council on Social Determinants of Health, A Review of Frameworks on the Determinants of Health. *https://doi.org/10.1186/1478-4491-9-4. Accessed 26/04/18,* 7(2), pp. 23-36.

Ansong Tornui , J., Armar-klemesu, M., Bosu, W.K.,& Bell, J.S, 2007. Effect of Delivery Care User Fee Exemption Policy on Institutional Maternal Deaths in the Central and Volta Regions of Ghana. *Ghana Med J. 2007 Sep,* 41(3), pp. 118-124.

Antai, D, 2009. Faith and child survival J Biosoc Sci. *The role of religion in childhood immunization in Nigeria.,* 41(1), p. 57–76.

Antai, D, 2009. Inequitable childhood immunization uptake in Nigeria. *A multilevel analysis of individual and contextual determinants. ,* 9(1), pp. 34-56.

Antwi B, 2014. UNICEF-Ghana. *Ghana Launches a National Newborn Health Strategy and Action Plan to Speed up the Reduction of Newborn Deaths,* 6(4), pp. 2-8.

Apoya, P., & Marriott, A, 2008. Achieving a shared goal:. Oxfam International.. *Free universal health care in Ghana,* 6(2), pp. 23-34.

Apoya, P., & Marriott, A, 2011. *Achieving a shared goal: Free universal health care in Ghana..* s.l.:Oxfam International.

Arcaya, M.C., Arcaya, A.L., Subramanian, S.V, 2015. Health Inequalities: Definitions, Concepts and Theories. *Global Health Action,* 7(2), pp. 34-46.

Armstrong, R., Waters, E., Roberts, H., Olivers, S., Popay, J, 2006. The role and theoretical evolution of knowledge translation and exchange in public health. *Journal of Public Health,* 28(4), pp. 384-389.

Aryee, J.R.A, 2000. *Saints, Wizards, demons and systems: Explaining the Success or Failure of Public Policies and Programmes.* Accra: Ghana Universities Press.

Asada, Y, 2005. A Framework for Measuring Health Inequity. *J Epidemiology of Community Health ,* 6(1), pp. 700-705.

Asthana, S and Halliday, J, 2006. Developing an Evidence Base for Policies and Interventions to Address Health Inequalities. *The Analysis of "Public Health Regimes,* 4(43), pp. 123-321.

Ataguba, J.E., Day, C., Mclntyre, D, 2015. Explaining the role of the social determinants of health on health inequality in South Africa. *Global Health Action ,* 65(2), pp. 34-38.

Atomic Energy Commission Act, Act 588, 2000. *Protection in certain Sectors of Economic activities. Ghanalex, Ghana Legal Environment legislation.* Accra, Ghana: s.n.

Awases M, Gbary A, Nyoni J, Chatora R, 2004. World Health Organization WHO-AFRO DHS Brazzaville;. [May 17, 2005], "Migration of Health Professionals in Six Countries: A Synthesis Report. *Available at http://www.afro.who.int/dsd/migration6countriesfinal.pdf,* 76(23), pp. 12-15.

Aylot, J., Brown, I., Copeland, R., et al, 2008. *Tackling obesities: The Foresight Report and implications for local government..* Sheffield, South Yorkshire:: Sheffield hallam University, Faculty of Health and Wellbeing.

Baer, L.D., Gesler, W.M., Konrad. T.R., 2000. The wineglass model:tracking the locational histories of health professionals. *Social Science and Medicine 2000, 50(3),* pp. 317-329.

Baker, D.J. P., 2002. Fetal programming of coronary heart disease. *Trends in endocrinology and metabolism,* pp. 364-368.

Balabanova D, Mills A, Conteh L, Akkazieva B, Banteyerga H, Dash U, et al, 2004. *Good health at low cost 25 years on: lessons for the future of health systems strengthening.* New York: Lancet.

Bambas, A., Casas J.A, 2001. Assessing equity in health: Conceptual criteria. 2001;8. In: *Equity and health.* Pan America Health Services Organization: Occasional Publication, p. 12–21. .

Bandura, A., 1977. *Self efficacy: toward a unifying theory of behavior change, Psychological Review, 84: 191-215. In Bowling, A. (2009), Research Methods in Health.* Open University Press, England: Investigating Health and Health Services.

Barbour, R.S, 2001. *Checklists for improving rigour in qualitative research: a case of the tail wagging the dog.* Bahamas: http://dx.doi.org/10.1136/bmj.322.7294.1115. .

Barker, D. J., 2007. The origins of developmental origins theory. *Journal of Internal Medicine, 261 (5)),* pp. 412- 417.

Barker, D. J, 2003. The midwife, the coincidence and the hypothesis. *British Medical Journal, 327-7429,* pp. 1428-1430.

Barker, J.D., Winter, P.D., Osmond, C., 1989. Weight in infancy and death from ischaemic heart disease. *Lancet, 2 (8663),* pp. 577-580.

Barker, J. O. C. G. J., 1989. Growth in utero, blood pressure in childhood and adult life and mortality from cardiovascular disease. *British Medical Journal,* 298(6673), pp. 564-567.

Bartley M, Blane D, 2008. *Inequality and social class in Scambler G (ed) Sociology as applied to medicine.* Paris: Elsevier Limited.

Bartley, M, 2004. *Health Inequality: An Introduction to Theories, Concepts and Methods. International Journal of Epidemiology.* Cambridge: Polity Press.

Bartley, M, 2007. *Health Inequality: An Introduction to Theories.* Polity Press ed. Cambridge, UK: Concepts and Methods.

Baškarada, S, 2014. *Qualitative case study guidelines Qualitative Report.* Melbourne Australia: Defence Science and Technology Organisation.

Bawah et al , 2017. *The Impact of the Ghana Essential Health Intervention Programme.* Kumasi, Ghana: Health Summit.

Baxter, P. &. J. S., 2008. Qualitative case study methodology: study design and implementation for novice researchers. *The Qualitative Report, (), Retrieved from http://www.nova.edu/ssss/QR/QR13-4/baxter.pdf,* 13(4), pp. 544-559.

Ben-Shlomo, Y., and Kuh, D., 2002. A life course approach to chronic disease epidemiology: Conceptual models, empirical challenges and interdisciplinary perspectives. *International Journal of epidemiology, 31 (2),* pp. 285-293.

Berger, P. L. &. L. T., 1967. *The social construction of reality: A treatise in the sociology of knowledge. Garden City, NJ: Anchor. In Creswell, JW (2014) Research design: qualitative, quantitative and mixed methods.* Thousand ed. s.l.:Sage Publications Inc.

Bergold, J and Thomas, S, 2012. Participatory Research Methods: A Methodological Approach in Motion. *Qualitative Social Research,* 13(1), pp. 34-37.

Black, D., Morris, J.N., Smith, C., Townsend, P, 1980. *The Black report (1980).* Penguin ed. London: Inequalities in health.

Blanchet, N. J., Fink, G., & Osei-Akoto, I. , 2012. The effect of Ghana's national health insurance scheme on health care utilization. *Ghana Medical Journal, 46 (2),* pp. 76-84.

Bolduc, D., Fortin, B., Fournier, M.A., 1986. The effect of incentive policies on the practice location of doctors: a Multinomial Probit Analysis. *Journal of Labor Economics 1986 14(4),* pp. 703-732.

Boon, E. K. , 2007. Knowledge systems and social security in Africa. *A case study on Ghana. Tribes and Tribals,* pp. 63-76.

Borghol, N., Suderman, M., McArdle, W et al, 2007. Associations with early-life socio-economic position in adult DNA mythelation. *International Journal of Epidemiology,* 41(1), pp. 62-74.

Bourdieu, P., 1986. The forms of capital. In J. Richardson (Ed.). *Handbook of Theory and Research for the Sociology of Education (New York, Greenwood),* pp. 241-258.

Bowling, A., 2009. *Research Methods in Health.* Open University Press ed. England: Investigating Health and Health Services.

Boyle, P.J., Norman, P., Popham, F., 2009. Social mobility: evidence that it can widen health inequalities. *Social Science and Medicine, 68 (2009), pp.,* pp. 1835-1842.

Braveman, P., Gruski, S, 2003. Defining equity in health. *J Epidemiology Community Health,* 56(1), pp. 23-29.

Braveman, P, 2003. Defining equity in health... *J Epidemiology Community Health.*

Breslau, N, 1995. Psyhiatric sequelae of low birth weight. *Epidemiologic Reviews, 17,* 17(1), pp. 96-106.

Brimblecombe, N., Dorling, D., Shaw, M., 200. Migration and geographical inequalities in health in Britain. *Social Science and Medicine, 50 (2000),* pp. 861-878.

Bromer, C., Marsit, C.J., & Amstrong, D.A. et al, 2012. Genetic and epigenetic variation of the glucocorticoid receptor (nr3c1) in placenta and infant neurobehavior. *Developmental Psychology,* 23(1), pp. 23-25.

Brotman, M.A., Guyer, A.E., Lawson, E.S.,, 2008. Facial emotion labeling deficit in children and adolescents at risk for bipolar disorder. *The American Journal of Psychiatry, 365 (3),* pp. 385- 38.

Bryman, A, 2007. *Barriers to Integrating Quantitative and Qualitative Research', Journal of mixed methods research 1 (1): 8-22. In Frost et al, (2010) Pluralism in qualitative research: the impact of different researchers and qualitative approaches.* Chicago: Up to date.

Buchan, J,, 2004. What Differences Does ("good") HRM Make. *Human Resources for Health 2004,* 2(6 ), pp. 478-4 491-2-6.

Buck, D and Maguire, D,, 2015. Inequalities in life expectancy. In: *changes over time and implications for policy.* UK.: The Kings Fund.

Bunker, J.P., Frazier, H.S., and Mosteller, F, 1995. *The Role of Medical Care in Determining Health: Creating an Inventory of Benefits.* In Society and Health: B.C. Amick., editor; , S. Levine, editor; , A.R. Tarlov, editor; , and D.C. Walsh, editor.

Cameron, A. C., & Trivedi, P. K, 2005. Microeconometrics. In: *Methods and applications.* USA: Cambridge University Press, p. 78.

Canavan, M.E., Sipsma, H.L., Kassie, G.M., Bradley, E.H, 2014. *Correlates of complete childhood vaccination in East African countries..* Las Vegas: Action press.

Castillo-Laborde, C, 2011. *Human resources for health and burden of disease: an econometric approach. Human Resources for Health.* Chicago: Bless.

CDC Global Health-Ghana, 2016. *Ghana at a Glance; Global Health; CDC, Atlanta.* London: https://www.cdc.gov/globalhealth/countries/ghana/. Accessed 25 March 2018..

Cercone, J. A. J., 2002. Reform of the Mexican Health Care System In Mexico. *A Comprehensive Development Agenda for the New Era Edited by: Giugale, M., Lafourcade, O., Nguyen, V. Washington DC: World Bank,* Volume 2001, pp. 409- 431.

Chavez, C., 2008. Conceptualizing from the Inside: Advantages, Complications, and Demands on Insider Positionality. *The Qualitative Report; TQR,* 13(3), pp. 3-5.

Chilvers, R, 2014. Planning Framework for Human resources for Health for Maternal and Newborn Care. PHD Thesis; London School of Hygiene & Tropical Medicine DOI. *https://doi.org/10.17037/PUBS.02124342. Downloaded from: https://researchonline.Ishtm.ac.uk,* 3(1), pp. 12-15.

Cicchetti, D., Rogosch, F.A., Toth, S. L., Melissa, L. Sturge-Apple, 2011. Normalizing the development of cortisol regulation in maltreated infants through preventive interventions. *Development and Psychopathology,* 23(3), pp. 789-800.

Cordero, M. I., Poirier, G. L., Marquez, C., Veenit, V., Fontana, X., Salehi, B.Ansermet, F. Sandi, C, 2012. Evidence of biological roots in the trans-generational transmission of intimate partner violence. *Translational Psychiatry,* 2(106), pp. 45-49.

Coulter, A, 1987. *Lifestyles and social class: implications for primary care, Journal of the Royal College of General Practitioners, 37:533-6. In Bowling, A. (2009), Research Methods in Health: Investigating Health and Health Services.* Devxer: Open University Press.

Craig, P, 2013. *Health Inequality Action Framework.* NHS Health Scotland: Edinburg.

Creswell, JW , 2013. *Qualitative inquiry and research design: choosing among five approaches.* Los Angeles: SAGE Publications. In Guetterman.

Creswell, JW, 2014. *Research design: qualitative, quantitative and mixed methods.* Thousand Oaks, California: Sage Publications Inc.

Crotty, M., 1998. *The foundations of social research: Meaning and perspective in the research process.CA:. , JW (2014) Research design: qualitative, quantitative and mixed methods.* Thousand Oaks: Sage Publications Inc.

Cutler, David M., Allison, B., Rosen, M.D., Sandeep Vijan, M.D, 2006. The Value of Medical Spending in the United States. *New England Journal of Medicine,* 355(9), pp. 1994-2002.

Dalinjong, P.A., Wang, A.Y., Homer, C.S.E, 2017. The operations of the free maternal care policy and out of pocket payment during child birth in rural northern Ghana. *Health economics review,* 34(2), pp. 1-8.

Davey Smith, G., Ben-Shlomo, Y., and Lynch, J., 2002. *Life course approaches to inequalities in coronary heart disease risk. In Bartley, M. (2004), Health Inequality: An Introduction to Theories, Concepts and Methods.* Cambridge: Polity Press.

Davis, J., 1995. *Sex Education.* New York: Laurel-Leaf Books.

Davis, J, 1995. *Sex Education. Laurel-Leaf Books;..* New York: http://www.zapmeta.ws/wiki/page/Sex_Education_(book). Accessed 26/08/2017.

Dayrit, M.M., Dolea, C. and Braichet J.M, 2010. One piece of the puzzle to solve the human resources for health crisis. *Bulleting of the World Health Organization.,* 5(1), pp. 23-25.

De Brouwere, V., Richard, F., Witter, S, 2010. Access to maternal and perinatal health services: lessons from successful and less successful examples of improving access to safe delivery and care of the newborn. *Tropical Medicine and International Health,* 4(1), pp. 23-24.

Dean, A.G., Sullivan, K.M., Soe, M.M, 2011. *OpenEpi: Open Source Epidemiologic Statistics for Public Health, Version 2.3.1. www.OpenEpi.com accessed 06/09/12.* Colombus Ohio: High Publications.

Denzin, N. K, 1971. *The logic of naturalistic inquiry, social forces, 50: 166-82. In Bowling (2009), Research Methods in Health: Investigating Health and Health Services.* England: Open University Press.

Derbile, E. K., & van der Geest, S, 2013. Repackaging exemptions under national health insurance in Ghana: How can access to care for the poor be improved. *Health Policy and Planning ,* 28(6), pp. 586-595.

Dickens, W.T., and Flynn, J.R, 2001. Heritability Estimates Versus Large Environmental Effects: The IQ Paradox Resolved.. *Psychological Review- The American Psychological Association Inc,* 108(2), pp. 346-369.

Diderichsen, F & Solar O, Irwin A, 2005. A conceptual framework for action on the social determinants of health. *Social Determinants of Health Discussion Paper 2 Policy and Practice.*

Dionne, G., Langlois, A., Lemire, N,, 1987. More on the geographical distribution of physicians. *Journal of Health Economics 1987, 6(4),* pp. 365-374.

Dorling, D, 2010. *Injustice: why social inequality persists.* Bristol: Policy Press.

Dovlo, D., 2007. Migration of Nurses from Sub-Saharan Africa: A Review of Issues and Challenges. *Health Services Research,* Volume 42, p. 1373–1388.

Dussault, G & Dubois, C, 2003. Human Resources for Health Policies. *A critical Component in Health Policies; Human Resources for Health,* pp. 1478-1499-1.

Eliot & Associates, 2005. *How to conduct a focus group; http/assessment.aas.duke.edu.* s.l.:s.n.

Eliot & Associates, 2010. *Engaging Focus Group Participants in High Value Discussions (part 1), www.qualitative-researcher.com/blog/?p=1659.* s.l.:s.n.

Fetters, M.D., Curry, L.A. and Creswell, J.W, 2013. Achieving Integration in Mixed Methods Designs—Principles and Practices. *Health Serv Res. 2013 Dec,* 48(6pt2), pp. 2134-2156.

Foster, G.M. and Anderson, B.G, 1978. *Medical Anthropology.* New York: Wiley.

Fraenkel, F. J., & Wallen, N. E, 2009. *How to design and evaluate research in education: Qualitative research.* 7th ed. New York: McGraw-Hill.

Frankie, N., 1998. *BCMA (British Columbia Medical Association): Attracting and retaining Physicians in Rural British Columbia. Report of the BCMA rural issues committee.* Florida: Vancouver[http://www.bcma.org/public/news publications/publication/policy papers/attracting retails.

Frenk, J, 2003. The concept and measurement of accessibility. In Health Service Research. *An anthology edited by White, K. Washington, DC Pan American Health Organization,* Volume 1992, pp. 824-855.

Fuchs, Victor, 1974. *Who Shall Live? Health, Economis and Social Choice.* New York: Basic Books.

Furuta M. and Salway S., 2006. Int Fam Plan Perspect, 2006. *Women's position within the household as a determinant of maternal health care use in Nepal,* 32(1), p. 17–27. [PubMed].

Gale, N.K., Heath, G., Cameron, E., Rashid, S. and Redwood, S, 2013. *Using the framework method for the analysis of qualitative data in multi-disciplinary health research.* s.l.:s.n.

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Geest, V., 2002. Respect and reciprocity: Care of elderly people in rural Ghana. *Journal of Cross-Cultural Gerontology,* Volume 17, pp. 3-31.

Ghana Health Service , 2015. *Annual Report.* Accra, Ghana, s.n.

Ghana Health Service and UNICEF Ghana, 2011. Health equity in Ghana: recent progress and emerging policy options. *Ghana Health Service and UNICEF Ghana.*

Ghana Health Service, 2011. *Annual Report.* Bolgatanga, Ghana, Upper East Region,.

Ghana Health Service, 2012. *Annual Report.* Bolgatanga, Ghana, Upper East Region.

Ghana Health Service, 2014. *2013 Annual Reproductive and Child Health Report.* Accra, Ghana, s.n.

Ghana Health Service, 2017. *2016 Annual Report.* Accra, Ghana, s.n.

Ghana Health Service, 2018. *Strengthening performance to achieve unversal health coverage: critical review of the 2017 performance.* Accra-Ghana, Senior Managers .

Ghana Health Service, 2018. *Strengthening performance to achieve unversal health coverage: critical review of the 2017 performance. Senior Managers Meeting 1.* Accra-Ghana: GHS.

Ghana Health Workforce Observatory, 2011. *Human Resources for Health Country Profile; Edition 2011.* Accra: s.n.

Ghana Statistical Service (GSS) and Macro International Inc, 1999. *Ghana Demographic and Health Survey 1998.* Calverton, Maryland: GSS and MI.

Ghana Statistical Service (GSS), 2009. *Ghana Health Service (GHS), and ICF Macro.Ghana Demographic and Health Survey 2008 GSS, GHS, and ICF Macro.* Accra, Ghana: s.n.

Ghana Statistical Service (GSS, 2004. Nogouchi Memorial Institute for Medical Research (NMIMR), and ORC Macro. . *Ghana Demographic and Health Survey 2003. Calverton, Maryland: GSS, NMIMR, and ORC Macro.*

Ghana Statistical Service, Ghana Health Service and ICF.2018, 2017. *Ghana Maternal Health Survey 2017: Key Indicators Report.* Accra, Ghana: GHS and ICF.

Ghana Statistical Service, 2006. Ministry of Health/Ghana, UNICE and Macro International Ghana Statistical Service (GSS), Ministry of Health/Ghana, UNICE and Macro International. *Ghana Multiple Indicator Cluster Survey 2006..*

Ghana Statistical Service, 2011. *Ghana Multiple Indicator Cluster Survey with Enhanced Malaria Model and Biomaker, 2011, Final Report.* Accra, Ghana.: s.n.

Ghana Statistical Service, 2015. *(GSS), Ghana Health Service (GHS), and ICF International Ghana Demographic and Health Survey 2014.* Rockville, Maryland, USA: GSS, GHS, and ICF International.

Ghanaian Times , 2012. *Surgeons Refuse Posting to Sunyani Regional Hospital.* 5th ed. Accra: The Ghanaian Times.

Gilmore, B. and McAuliffe, E, 2013. Effectiveness of community health workers delivering preventive interventions for maternal and child health in low- and middle-income countries: a systematic review. *BMC Public Health,* 13(https://doi.org/10.1186/1471-2458-13-847), p. 847.

Gilson, L. , 1998. In defence and pursuit of equity. *Social Science and Medicine,* 1998(47), p. 1891–1896.

Glaser, Barney G, & Strauss, Anselm, L, 1967. The discovery of grounded theory. Chicago: Aldine. In Bergold, J and Thomas, S (2012) Participatory Research Methods: A Methodological Approach in Motion. *Qualitative Social Research,* 13(1), p. 20.

Glaser, F. and Barney, G, 2002. Constructivist Grounded Theory?. *Qualitative Social Research,* 3(3), pp. 1-3.

Gluckman, P. D., Hanson, M.A., Cooper, C., Thornburg, K.L, 2008. Effect of in utero and early life conditions on adult health and disease. *New England Journal of Medicine,* 359(1), pp. 61-73.

Gluckman, P.D., Hanson, M.A., & Buklijas, T, 2010. A conceptual framework for the developmental origins of health and disease. *Journal of Developmental Origins of Health Disease,* 1(01), pp. 6-18.

Gottesman, I.I., & Gould, T.D, 2003. The endophenotype concept in psychiatry:. *Etymology and strategic intentions ,* 160 (4), pp. 636- 645.

Gottesman, I. &. G. T., 2003. The endophenotype concept in psychiatry: Etymology and strategic intentions. *The American Journal of Psychiatry,* Volume 4, pp. 636- 645.

Gottfredson, L.S, 2004. Intelligence: is it the epidemiologists' elusive "fundamental cause" of social class inequalities in health. *Journal of Personality and Social Psychology,* 86 (1), pp. 174-199.

Government of Ghana, 2014. *Inequalities in Ghana: Inequalities Country Report 2014. Pan African International Conference on Inequalities 2014.* Accra, GoG.

Graham, H., and Kelly, M. P, 2004. Health inequalities: Concepts, Frameworks and policy.. *Health Development Agency, NHS.*

Graham, H, 2009. *Health inequalities, social determinants and public health policy.* Ohio: The Polity Press.

GSS, GHS and ICF, 2018. *Ghana Maternal Health Survey 2017: Key Indicators Report.* Accra, Ghana: Ghana Statistical Service, Ghana Health Service and ICF.

Guest, G., Bunce, A., Johnson, L, 2006. How Many Interviews are Enough?: An experiment with data Saturation and Validity. *Field Methods 2006,* 59(DOI: 10.1177/1525822x05279903), p. 18.

Gupta, N., Maliqi, B., Franca, A., Nyonator, F., Pate, M.A., Sanders, D., Belhadj, H., Daelmans, B, 2011. Human resources for maternal, newborn and child health: from measurement and planning to performance for improved health outcomes.. *Human Resources.*

Gwatkin, D.R, 2017. *Trends in health inequalities in developing Countries.* s.l.:The Lancet.

Gyimah, S., 2007. What has faith got to do with it? Religion and child survival in Ghana. *J Biosoc Sci. 2007. November,* 39(6), p. 923–937.

Ham, C., 2009. *Health Policy in Britain.* 6th ed. UK: Palgrave MacMillan.

Hargreaves, Dougal S., Marbini, Aghileh D., and Viner, Russell M, 2013. Inequality Trends in Health and Future Health Risk among English Children and Young People, 1999-2009. *Arch Dis Child 2013; 98: 850-855 doi: 10.1136/archdischild-2012,* pp. 303-403.

Hatzenbuehler, M.L., Phelan, J.C., Link, B.G, 2013. Stigma as a Fundamental Cause of Population Health Inequalities. *AM J Public Health 2013 May,* 103(5), p. 813–821.

Heijmans, B.T., Tobi, E.W., Lumey, L.H., Slagboom, P.E, 2009. The epigenome: archive of the prenatal environment. *Epigenetics,* 4(8), pp. 526-531.

Helman, C., 1990. *Culture, Health and Illness.* 2nd ed. London: Wright (Butterworth) Publishers.

Hertzman, C., Siddiqi, A., Hertzma, E., Lori, I.G.,Ziba, V., Tanja H.A.J., Ruth, B., Alfredo, T., Marmot, M, 2010. Bucking the inequality gradient through early child development. *British Medical Journal,* pp. 340 - 468.

Hofrichter, H, 2010. Tackling health inequities. *a framework for public health practice.*

Hofrichter, R., 2010. *Tackling health inequities through public health practice: theory to action.* New York: Oxford University Press.

Horton, R, 2001. Ghana: defining the African challenge. pp. 2141-49.

Hosmer, D.W., Jr., Lemeshow, S., & Sturdivant, R.X, 2013. *Applied Logistic Regression.* Oxford: Wiley-Blackwell.

Ives, J., Damery, S., and Redwod, S, 2013. PPI, Paradoxes and Plato. *Who is sailing the ship? J Med Ethics. 2013 Mar,* 39(3), pp. 181- 189.

Jaha, I. R., & Sika-Bright, S, 2015. Challenges of the livelihood empowerment against poverty program in the upper west region of Ghana. *The institutional perspective. UDS International Journal of Developmen,* 2(1), pp. 188-205.

James D, 1946. *World Health Organization: Preamble to the Constitution of the World Health Organization as adopted by the International Health Conference.* New York: Rex press .

Jerome N, 2012. *United Nations General Assembly, "The future we want.* New York, USA, : http://www.un.org/ga/search/view_doc.

Kawachi, I. S. S. A.-F. N., 2002. A glossary of health inequities. *Journal of Epidemiology and Community Health. 2002,* Volume 56, p. 647–652.

Kingdon, J., 2003. *Agendas, Alternatives and Public Policies.* 2nd ed. USA: Longman Classics in Political Science.

Kingdon, J., 2011. *Agendas, Alternatives and Public Policies.* USA: Longman Classics in Political Science.

Kingdon, J. W., 1984. *Agendas, Alternatives, and Public Policies.* Boston: Little Brown.

Kongsri S, Limwattananon S, Sirilak S, Prakongsai P, Tangcharoensathien V. , 2011. Equity of access to and utilization of reproductive health services in Thailand. *National reproductive health survey data, 2006 and 2009. Reprod Health Matters,* Volume 19, p. 86–97.

Kongsri S, Limwattananon S, Sirilak S, Prakongsai P, Tangcharoensathien V, 2006 and 2009. Equity of access to and utilization of reproductive health services in Thailand: national reproductive health survey data. *Reprod Health Matters,* p. 86–97.

Krieger, N. , 1994. Epidemiology and the web of causation. *Has anyone seen the spider? Social Science and Medicine,* 39 (1994), pp. 887-903.

Kuzawa, C.W & Thayer, Z. M, 2011. The role of epigenetics. Epigenomics. *Timescales of human adaption,* 3(2), pp. 221-234..

Kuzawa, C.W & Thayer, Z. M, n.d. Timescales of human adaption: The role of epigenetics. *Epigenomics,* 3(2), pp. 221-234.

Lawan, U.M., Amole, G.T., Khayi, J.H, 2017. Rural posting experience, requests for transfer, and perspectives about critical factors forvstaff retention among primary health care workers in urban Kano, Nigeria. *J Clin Pract,* 20(1), pp. 25-30.

Leon, D.A and Walt, G.G, 2001. *Poverty, inequality and health in international perspective: a divided world? In: Leon DA, Walt G, editors. Poverty, inequality and health: an international perspective.* Oxford city: Oxford University Press.

Lester, B.M., Tronick, E. & Nestler, E., Abel, T.,Kosofsky.B.,Kuzawa, CW., Marsit, C.J., Maze, I., Meaney, M.J., Monteggia, M.L., Reul, J.M., Skuse, D.H., Sweatt, J.D., Wood, M.A., 2011. Behavioral epigenetics.,. *Annals of the New York Academy of Sciences,* 4(1), pp. 345-450.

Lopez A.D, Mathers C.D, Ezzati M, Jamison D.T., Murray C.J.L, 2006. *Global burden of disease and risk factors.* New York: The World Bank and Oxford University Press.

Low, F. M., Gluckman, P.D. & Hanson, M. A, 2011. Developmental plasticity and epigenetic mechanisms underpinning metabolic and cardiovascular diseases. *Epigenomics,* 3(3), pp. 279- 294.

Luther, A., 2016. World Health Organization. *Europe Regional Office Promoting Health and Reducing Health Inequities by Addressing the Social Determinants of Health.,* 6(3), pp. 23-26.

Maccani, M. A & Marsit, C.J. , 2009. Epigenetics in the placenta. *American Journal of Reproductive Immunology,,* 62(2), pp. 78-89.

Mackenbach, J.P., Kunst, A.E., Cavelaars, A.E.J.M., Groenhof, F., and Geurts, J.J.M. , 1997. Socioeconomic inequalities in morbidity and mortality in Western Europe. *Lancet 349,* 4(2), pp. 1655-9.

Mackenbach, J.P., Stirbu, I., Roskam, A.J.R., Schaap, M. M., Menvielle, G., Leinsalu, M., 2008. Socioeconomic inequalities in health in 22 European countries. *New England Journal Medicine, 358,* 4(2), pp. 2468-2481.

Maclntyre, A, 1984. A study in moral theory. In: *After Virtue.* Paris: University of Notre Dame press., pp. 2-8.

Manzi, F., Schellenberg, J.M., Hutton, G., Wyss, K., Mbuya, C., Shirima, K., Mshinda, H., Tanner, M., Schellenberg, D, 2012. Human Resources for Health Care Delivery in Tanzania. *A Multifaceted Problem;Human Resources for Health 2012, 10:3 doi: 10.1186,* 3(1), pp. 44-48.

Marmot, M. , 2010. Fair Society, Healthy Lives. *: The Marmot Review Executive Summary. Strategic Review of Health Inequalities in England Post-2010,* 34(6), pp. 2-6.

Marmot, M. and Wilkinson, R, 006. *Social Determinants of Health, 2nd Edition. 2.* Oxford:: Oxford University Press, .

Marmot, M, 2005. Social Determinants of Health Inequalities. *Lancet 2005; 365:1099-104 London,* 4(3), pp. 24-29.

Martin T, 2004. Department of Health: Media Release. *Substantial Allowances Ready to Roll for Health Professionals,* 65(2), pp. 32-37.

Martinson, M.L, 2000. Income inequality in health at all ages. *A comparison of the United States and England. American Journal of Public Health,* 102 (11), pp. 2049- 2056.

Martin, T., 2011. *UNFPA-State of the World Midwifery 2011: Delivering Health, Saving Lives. United Nations Population Agency.* New York: Rookies press.

Mason, J, 2006. Six strategies for mixing methods and linking data in social science research. *. ESRC National Centre for Research Methods working paper series, April. Real life methods sociology. Manchester, UK,* 5(1), pp. 231-253.

Maxwell N., 2008. Staffing remote rural areas in middle-and low-income countriesBMC. *: a literature review of attraction and retention. ,* 4(1), pp. 224-235.

Maxwell, J.A. and Mittapalli, K, 2010. Realism as A Stance for Mixed Methods research. *In A. Tashakkori and C. Teddlie (Eds.), SAGE Handbook of Mixed Methods in Social and Behavioral Research, 2nd ed. Sage Publications, 2010 Pp,* 5(1), pp. 145-167.

Maxwell, J.A., 2013. Qualitative Research Design. *An Interactive Approach. Applied Social Research Methods. Thousand Oaks, CA: Sage,* 56(3), pp. 231-254.

Maxwell, N., 2014. Department of Health and Human Services Determinants of Health. *https://www.healthypeople.gov/2020/about/foundation-health-measures/Determinants-of-Health accessed 26/12/2016,* 6(1), pp. 23-29.

Mba, C.J, 2007. Population ageing in Ghana and correlates of support availability. *Gerontechnology,* 6(2), pp. 102-111.

McEvoy, P., & Richards, D., 2006. Rationale for using a combination of quantitative and qualitative method.. *s In Maxwell, J.A. and Mittapalli, K. (2010) Realism as A Stance for Mixed Methods research Journal of Research in Nursing 11,* 67(2), pp. 66-78.

Meaney, M. J, 2001. Maternal care, gene expression and the transmission of individual differences in stress reactivity across generations. *Annual Review of Neuroscience, 24,* 7(2), pp. 1161-1192.

Mertens, D.M., 2010. *Research and evaluation in education and psychology: Integrating diversity with quantitative, qualitative and mixed methods (3rd ed.)..* Thousand Oaks: Sage.

Mills, A, 1998. Health policy reforms and their impact on the practice of tropical medicine The British Council 1998. https://academic.oup.com/bmb/article-abstract/54/2/503/285010. Accessed 22/02/18. *British Medical Bulletin 1998,* 54(2), pp. 503-513.

Ministry of Health, , 2007. *Ghana National Health Policy: Creating Wealth through Health, Ministry of Health.* Accra-Ghana: s.n.

Ministry of Health, 2004. *Ghana National Health Insurance Regulations, LI 1809. 2004.* Accra, Ghana: s.n.

Ministry of Health, 2007. *Ghana Human Resource for Health Policy and Plan 2007-2011.* Accra: s.n.

Ministry of Health, 2009. *Ghana Independent Review Health Sector Programme of work 2009.* Accra: s.n.

Ministry of Health, 2010. *Ghana Occupational Health and Safety Policy and Guidelines for the Health Sector; Ministry of Health.* Accra, Ghana: s.n.

Ministry Of Health, 2012. *Ghana Preliminary Findings from the 2011 MICS to the Health Summit: Is Ghana Reducing Disparities and Improving Equity on Key Health Outcomes; www.MOH-Ghana.org.* Accra: s.n.

Ministry of Health, 2015. *Ghana Holistic Assessment of Health Sector Programme of Work 2014.* Accra, Ghana: s.n.

Ministry Of Health, 2017. *Ghana Accountability in the Health Sector to achieve the health related SDGs. Ministry of Health 2017 Health Summit,.* Kumasi-Ghana: s.n.

Mittapalli, K, 2010. *Realism as A Stance for Mixed Methods research..* Accra: s.n.

Mkoka, D.A., Mahiti, G.R., Kiwara, A., Mwangu, M., Golcolea, L., Hurtig, A.K. , 2015. Once the government employs you, it forgets you. *Health workers' and Managers' perspectives on factors influencing working conditions for provision of maternal health,* 6(2), pp. 12-19.

Moffatt, S., White, M., Mackintosh, J., Howel, D, 2006. Using qualitative and quantitative research data in health services research: what happens when mixed methods findings conflict. *Biomed Central Health Service Research, 2006; 6: 28; doi: 10.1186/14,* 8(3), pp. 32-38.

Morse, J.M. & Field, P.A, 2008. *Qualitative research methods for health professionals (2nd ed.)., :.* Thousand Oaks CA: Sage.

Muenning, Peter and Wolff, Steven H , 2007. Health and Economic Benefits of Reducing the Number of Students per Classroom in US Primary Schools. *AM J Public Health,* 97(4), pp. 24-34.

Mutangadura, G., Gauci, A., Armah, B. Woldemariam, E., Ayalew, D., Biniam, E, 2007. Health Inequalities in Selected African Countries: Review of Evidence and Policy Implications. *African Economic Conference, 2007;Addis AbabaEthiopia,https://www.afdb.org/fileadmin/uploads/afdb/Documents/Knowledge/Conference_2007_anglais_21-part-V-1.pdf. Accessed 25/08/2017,* 9(1), pp. 24-34.

Nafziger, E.W, 1988. *Inequality in Africa: Political Elites, Proletariat, Peasants and the Poor.* Cambridge: Cambridge University Press.

Namasivayam A., Osuorah, D.C., Syed, R., Antai, D, 2012. The role of gender inequities in women's access to reproductive health care351–364. doi: 10.2147/IJ. *a population-level study of Namibia, Kenya, Nepal, and India. Int J Womens Health, 2012 ,* 65(34), pp. 134-143.

National AIDS Control Programe, 2006. *HIV/AIDS Sentinel Survey Report.* Accra, Ghana: Ghana Health Service.

National Development Planning Commission, 2010. *Medium Term National Development Policy Framework: Ghana Shared Growth and Development Agenda (GSGDA).* Accra, Ghana: s.n.

National Development Planning Commission, 2015. Medium Term National Development Policy Framework. *Ghana Shared Growth and Development Agenda (GSGDA) II, Accra, Ghana,* 10(1), pp. 2014-2017.

Navarro, V., Muntaner, C., Borrell, C., Benach, J., Quiroga, A., Rodríguez-Sanz, M. , Verges, N., Passarin, M.I, 2006. Politics and health outcomes. *Lancet,* 368(2), pp. 1033-1037.

Neal S, Channon A, Carter S, Falkingham J, 2015. Is equitable coverage of maternal health services for the poorest a feasible policy goal in post. *Power Point presentation at the Prince Mahidol Award Conference Parallel Session,* 6(2), pp. 274-340.

NHS Health Scotland, 2016. Inequalities Briefing: Health inequalities- what are they and how do we reduce them. *Health Scotland Publications; www.healthscotland.com accessed 12.06.2016.*

Noble, K.G., Houston, S.M., Kan, E., Sowell, E.R, 2012. Neural correlates of socioeconomic status in the developing human brain. *Developmental Science,* 2389(5), pp. 1-12.

Nyonator, F., Awoonor-Williams, J.K., Philips, J.F., Jones, T.C., Miller, R.A, 2005. The Ghana Community-based Health Planning and Services Initiative for Scaling up service delivery innovation. *Health Planning and Policy,* 20(1), pp. 25-34.

Obermeyer, C.M, 1997. Qualitative Methods: A key to a better understanding of demographic behavior. *Population and Development Review, 23 (4): 813-813. In Staveteig, S. (2016) Understanding unmet need in Ghana: Results from a follow-up study to the 2014*

*Ghana Demographic and Health survey. DHS Qualitative Research Studies No. 20. Rockville, Maryland, US.*

OECD, 2002. Geographical in-balances in HRHC: Size, determinants and policy responses Paris. *Working Party on Social Policy, Human Resources for Health Care System,* 33(9), pp. 1003-1381.

Offei, AK. Bannerman, C & Kyeremeh, K, 2004. *Health Care Quality Assurance Manual: for Sub—districts.* Accra, Ghana: s.n.

Ogden, J, 1996. *Health Psychology: A textbook.* Buckingham, Philadelphia: Open University Press.

Olorunsaiye, C, 2015. Reducing Maternal Deaths in West and Central Africa. *Population Reference Bureau; Washington, DC 20009 http://www.prb.org/Publications/Articles/2015/maternal-deaths-west-central-africa.aspx. Accessed 15/08/2017.*

Olsen, W, 2004. *Triangulation in social research: qualitative and quantitative methods can really be mixed. Developments in Sociology.* M. Holborn Ormskirk: Causeway Press.

Onwuegbuzie, Anthony J. & Leech, Nancy L, 2007. A call for qualitative power analyses. *Quality & Quantity,* 41(1), pp. 105-121.

O'Reilly, M., & Parker, N, 2012. Unsatisfactory saturation": A critical exploration of the notion of saturated sample sizes in qualitative research. *Qualitative Research,* 13(2), pp. 190-19.

Organization, W. H., 2016. *Health Impact Assessment: Glossary of Terms Used accessed 5/11/2016.* Denver: Solits Press.

Osei-Assibey, E, 2014. Inequality in Ghana. *A Fundamental Challenge. Briefing Paper, Accra- Ghana.*

Osmond, C., Kajantie, E., Forsen, T.J.,Eriksson, G.J.,Barker, D.J.P, 2007. Infant growth and stroke in adult life:. *The Helsinki Birth Cohort Study. Stroke,* 38(2), pp. 264- 270.

Pallant, J, 2005. SPSS Survival Manual:. *A step by step guide to data analysis using SPSS Windows (Version 12) Ligare, Sidney.*

Patton, M. Q, 2001. Qualitative Research and Evaluation Methods, third edition. Thousand Oaks, CA: Sage Publications. In Maxwell, J.A. & Mittapalli, K. (2010) Realism as A Stance for Mixed Methods research.

Patton, M. Q, 2015. *Qualitative research & evaluation methods: Integrating theory and practice.* 4th edition ed. Thousand Oaks: Sage.

Pega, F & Veale, JF, 2015. The Case for World Health Organization Commission on Social Determinants of Health to Address Gender Identity. *AM J Public Health,* 35(3), p. 105.

Peter, G., 2014. *World Health Organisation The Contribution of Malaria Control to Maternal and Newborn Health (progress and impact series 10); Roll Back Malaria Partnership Secretariat, World Health Organization,.* Geneva: Donald press.

Petticrew, M., Whitehead, M., Graham, H., Macintyre, S.J., Bambra, C., Egan, M, 2004. Evidence Based Public Health Policy and Practice: Evidence for public health policy on inequalities: 2: Assembling the evidence jigsaw. *Journal of Epidemiology and Community Health; 58:817-821; doi: 10.1136/jech 2003.015297; http:// jech.bmj.com. Accessed 18/08/17.*

Pfeffer, J, 1998. Six Dangerous Myths About Pay. *Havard Review,* 12(3), pp. 109-119.

Philips, D. C., & Burbules, N.C, 2000. *Post positivism and educational research. Lanham, MD: Rowman & Littlefield. In Creswell, JW (2014) Research design: qualitative, quantitative and mixed methods.* Thousand Oaks, California: Sage Publications Inc.

Pill, R & Scott, N.C.H, 1988. Invitation to attend a Health Screening in a General Practice Setting: the views of cohort of non-attenders. *Journal of the Royal College of General Practice,* 38(5), pp. 57-60.

Power, C. and Matthews, S, 1997. Origins of health inequalities in a national population sample. *Lancet,* 350(9091), pp. 1584-1589.

Report, A. (. M. W. A. C. :. A. I. o. H., n.d. *Medical Workforce Supply and Demand in Australia: A discussion Paper.* North Sydney: [http://amwac.health.nsw.gov.au/amwac/amwac/pdf/supply&demand98.pdf.

Republic of Ghana, 2000. Adolescent Reproductive Health Policy. *National Population Council, 2000, Accra.*

Requejo, J.H., Bryce, J., Barros, A.J., Berman, P., Bhutta, Z., Chopra, M. et al, 2015. *Countdown to 2015 and beyond: fulfilling the health agenda for women and children.* s.l.:Lancet.

Risnes, K. R., Vatten, L. J., Baker, L.J et al, 2011. Birthweight and mortality in adulthood: A systematic review and meta-analysis. *International Journal of Epidemiology,* 40(3), pp. 647-661.

Russ, S.A., Larson, K., Tullis, E. et al, 2014. A Life course Approach to Health Development: Implications for the Maternal and Child Health Research Agenda. *Maternal and Child Health J,* Volume 18, p. 49.

Rutkowski, J, 2003. *The labor market in the health care sector: selected issues. The World Bank.* Washington, DC: Unpublished paper.

Saleh, K, 2013. *The Health Sector in Ghana: A Comprehensive Assessmen.* Washington, DC: The World Bank.

Schoonenboom, J.R. and Burke, J, 2017. How to Construct a Mixed Methods Research Design. *Kolner Z Soz Sozpsychol,* 69(2), p. 107–131.

Speller, Viv, 2007. Health Promotion: Planning and Strategies. *Health education,* 107(2), pp. 236-237.

Speller, D. V., 2007. Health Promotion: Planning and Strategies. *Health education,* 107(2), pp. 236-237.

Staveteig, S, 2016. *Understanding Unmet Need in Ghana: Results from a Follow-up Study to the 2014 Ghana Demographic and Health Survey.* Rockville, Maryland, USA: ICF International.

Steinbach R, Eni-Olotu M, Kwiatkowska R, Tolfree R, 2016. Health Knowledge Public Health Textbook: 4c Equality, Equity and Policy. *Inequalities in the distribution of health and health care and its access, including inequalities relating to social class, gender, culture and ethnicity, and their causes,* Issue https://www.healthknowledge.org.uk/public-health-textbook/medical-sociology-policy-economics/4c-equality-equity-policy (accessed 25/5/2017).

Tashakkori, A., & Teddlie, C. (Eds.) , 2010. SAGE handbook of mixed methods in social and behavioral research. *Thousand Oaks, CA: Sage.*

Tashakkori, A., and Teddlie, C, 1998. *Mixed methodology: Combining qualitative and quantitative approaches.* s.l.:Newbury Park CA: Sage Publications.

Tashakkori, A., and Teddlie, C, 2003. The past and future of mixed method research: From data triangulation to mixed model designs.. *In Tashakkori, A & Teddlie, C, Handbook of mixed methods in social and behavioral research,* pp. 671-701.

UNFPA, 2013. *State of the World's Population: Motherhood in childhood: facing the challenges of adolescent pregnancy..* New York: United Nations Population Fund.

UNICEF-Ghana, 2014. *Ghana Launches a National Newborn Health Strategy and Action Plan to Speed up the Reduction of Newborn Deaths. www.unicef.org/ghana/media-8404.html..* s.l.:s.n.

United Nations, 1987. UN Documents: Gathering a Body of Global Agreement. *NGO Committee on Education of the Conference of NGOs,* 3(1), pp. 12-18.

United Nations, 2000. *United Nations Millennium Declaration.* United Nations General Assembly ed. New York: s.n.

United Nations, 2005. *United Nations Development Assistance Framework for Ghana, 2006-2010.* Ghana: United Nations Country Team.

van Doorslaer, E., Wagstaff , A., Bleichrodt, H., Calonge, S., Gerdtham, U.G., Gerfin, M., Geurts, J., Gross, L., Häkkinen, U., Leu, R.E., O'Donnell, O., Propper, C., Puffer, F., Rodríguez, M., Sundberg, G., and Winkelhake, O , 1997. Income-related inequa. *Inequa,* 53(7), pp. 32-43.

Vapattanawong P, Hogan MC, Hanvoravongchai P, Gakidou E, Vos T, Lopez AD, et al, 2007. *Reductions in child mortality levels and inequalities in Thailand: analysis of two censuses.* Florida: Lancet.

Wade, D.T. and Halligan, P.W, 2004. *Do biomedical models of illness make for good health care systems.* Bahamas: Dark press.

Wadsworth, M. E. J. Early life. In Marmot, M., and R. G. Wilkinson, 1999. *Social determinants of health.* New York: Oxford Press.

Walt, G and Gilson, L, 1994. Reforming the health sector in developing countries: the central role of policy analysis. *Health Policy and Planning,* 2(4), pp. 353-70.

Walt, G et al, 2008. *Doing" health policy analysis: methodological and conceptual reflections and challenges.* Oxford: Oxford University Press.

Webb, E. J., Campbell, D. T., Schartz, R. D. and Sechrest, L, 1966. *Unobtrusive Measures: Nonreactive Research in the Social Sciences,.* IL:Chicago: Rand McNally College Publishing Company.

Whisnant, R, 2004. *Confronting pornography: Some conceptual basics.* Melbourne, Australia: Spinifex Press.

White, D., Dynes, M., Rubardt, M., Sissoko, K., Stephenson, R, 2013. The influence of intrafamilial power on maternal health care in Mali: perspectives of women, men and mothers-in-law. *Int Perspect Sex Reprod Health,* 39(2), p. 58–68.

Wilkinson, R.G. & Pickett, K.E., 2009. *The spirit level: why equality is better for everyone.* New York: Bloomsbury Press.

Wood, MD, Agarwal, S., Young, B., Jones, D., Sutton, A, 2004. Integrative Approaches to Qualitative and Quantitative Evidence. *Health Development Agency,* 32(2), pp. 32-45.

Wooldridge, J.M, 2010. *Econometric Analysis of Cross Section and Panel Data.* 2nd ed. Cambridge, MA.: MIT Press.

World Bank, 2011. *World Development Report 2011.* Washington DC: World Bank.

World Health Organisation, 1946. *Constitution of the World Health Organisation.* Paris: Www.who.int/governance/eb/who_constitution_en.pdf.

World Health Organization, 1997. *Inter-country consultation on development of human resourcesin health in the Africa Region Brazaville:WHO Regional Office for Africa.* Chicago: Elites.

World Health Organization, 2010. Increasing Access to Health Workers in Remote and Rural Areas through Improved Retention: Global Policy Recommendations. Geneva: World Health Organization. *WHO guidelines approved by the Guidelines Review Committee,* 6(2), pp. 65-70.

World Health Organization, 2015. *World Health Statistics.* Geneva: City Press.

World Health Organization, 2016. *Health Impact Assessment: the Determinants of Health..* Oxford: Http://www.who.int/hia/evidence/doh/en.

Yin, R. K., 2003. *Case Study Research Design and Methods: Applied Social Research Methods Series Vol.5.* Third ed. UK: Sage Publications.

Yin, R. K., 2009. *Case study research: Design and methods.* 4th ed. Thousand Oaks, CA: Sage.

Zere, et al, 2012. Inequities in maternal and child health outcomes and interventions in Ghana. *BMC Public Health,* 12(252), pp. 2-4.

Zurn, P., 2002. *Imbalances in the Health Workforce. Briefing Paper.* Geneva: World Health Organization.