Health outcomes from child marriages in humanitarian settings

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Abstract

Background Globally, it is predicted that there are 640 million girls and women around the world, alive today, who were married off in childhood. Evidence shows that there is an increase in the prevalence of child marriages during humanitarian crises. Girls who have had child marriages in humanitarian settings often have their health neglected. This systematic review aims to explore the issue of child marriages by focusing on its health implications within humanitarian settings, in line with sustainable development goals.

Methods A mixed-methods systematic review was conducted using four databases (MEDLINE, PSYCINFO, CINAHL, Web of Science), focusing on girls who have had child marriages and their experienced health outcomes in humanitarian settings. The mixed-methods appraisal tool was used to evaluate the quality of the studies. Thematic analysis was then utilised to critically interpret the qualitative studies and develop a conceptual model for the causes of health outcomes experienced by the girls. This review follows the PRISMA guideline recommendations for systematic reviews.

Results Among the 1406 articles screened by abstracts, 20 met the eligibility criteria. We found that the odds ratio of IPV is significantly increased when women are exposed to child marriages in humanitarian settings and pooled this in a forest plot. The themes developed from qualitative studies were: the fragility of healthcare systems; the mental health implications; nutritional well-being; the consequences of IPV and sexual and reproductive health challenges. Our conceptual model shows that there are multiple risk factors, relating to the social determinants of health, driving the health outcomes girls experience from child marriages, in humanitarian settings.

Conclusion Available evidence suggests that health outcomes of girls who experienced child marriages in humanitarian settings are attributable to several risk factors, yet this population remains overlooked. More studies analysing the risk factors are needed to develop effective interventions.

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Chapter 1 Introduction

1.1 Introduction to child marriage

Child marriages are defined by the United Nation (UN) as a formal or informal union that involves at least one party below the age of 18 (Efevbera and Bhabha, 2020; OHCHR, 2018). This practice has many human rights violations, including the right to education, reproductive rights and freedom from violence. They are robbed of their future, while limiting their life choices and autonomy (Sr and Wong, 2012). Yet it remains prevalent, especially in low- and middle-income countries (LMIC) (Girls Not Brides, 2022; Santhya, 2011). In fact, it is estimated that around 640 million girls and women, alive today, were married whilst in childhood (UNICEF, 2023a). In comparison, an estimated 115 million boys and men around the world were married as children (UNICEF, 2023b). This highlights the gender inequality remaining in these areas. The 5th Sustainable Development Goal, declared by the UN, aims to achieve gender equality and empower all women and girls (United Nations, 2015a). The UN SDG 5.3 goal is to eliminate all harmful practices, such as child, early and forced marriage by 2030 (United Nations, 2015a).

The term "early marriage" is often used interchangeably with "child marriage" in literature, with both sharing the same definition. However, early marriage can include factors, other than age, which would stop individuals from being able to consent to marriage (Abdurahman et al., 2022). Examples of these factors include an individual's physical, sexual, emotional and psychosocial development, as well as their educational and life aspirations (Sexual Rights Initiative, 2013). In this thesis, both terms are used with the same meaning.

Forced marriage is where one or both of the spouses do not consent to the marriage, regardless of their age and an element of threats, force and psychological pressure is used to get the parties

to marry (Rele, 2007). Compared to forced marriages, arranged marriages are different. During arranged marriages, the families of the spouses take the lead with liaising the union, however, the choice and the final say remains with the spouses on whether they will be marrying (Tahir, 2021). One example of forced marriage and how it affects children, is the method in which women are recruited into armed fighting groups, such as Al-Shabaab (Badurdeen, 2018). This is against the girls will, and some of whom are as young as 14 years old (Badurdeen, 2018). They are forced to marry the fighters, as their families as threatened with violence (Badurdeen, 2018). In many cases, the concepts of both early and forced marriages often intersect.

1.2 Prevalence of child marriage

The standard measure for the global monitoring of child marriage is based on prevalence. This is the total number of individuals aged 20 - 24 in a population who were first married or in union before age 18. As defined by United Nations Children's Fund (UNICEF), this is the indicator used by the UN to monitor the progress towards the SDG target 5.3 on the elimination of child marriages (UNICEF, 2023a). One of the advantages of this method is that the population has lived through the period in which they were at risk of child marriage and thus this cohort bears no further risk of marrying in childhood. Therefore, it represents the true prevalence. However, a limitation of this measure is that it takes 5 to 6 years to see the impact of certain risk factors, such as the COVID-19 pandemic, on child marriages (UNICEF, 2023a). The delay is not just in seeing the impact of child marriages, but also the figures of the prevalence as well.

Table 1: Prevalence of female child marriages

Country	Prevalence of girl child marriage (%)	Reference year	Data Source
Afghanistan	29	2022 - 23	MICS
Albania	12	2017 - 18	DHS
Algeria	4	2018 - 19	MICS
Angola	30	2015 - 16	DHS
Argentina	16	2019 - 20	MICS
Armenia	5	2015 - 16	DHS
Azerbaijan	11	2011	DHS
Bangladesh	51	2019	MICS
Belarus	5	2019	MICS
Bolivia (Plurinational State of)	20	2016	DHA (EDSA)
Burkina Faso	51	2015	EMDS
Burundi	19	2016 - 17	DHS
Cabo Verde	8	2018	DHS
Cambodia	18	2021 - 22	DHS
Cameroon	30	2018	DHS
Central African Republican	61	2018 - 19	MICS
Chad	61	2019	MICS
Colombia	23	2015	DHS
Comoros	21	2022	MICS
Congo	27	2014 - 15	MICS
Costa Rica	17	2018	MICS
Côte d'Ivoire	26	2021	DHS
Cuba	29	2019	MICS
Democratic People's Republic of Korea	0	2017	MICS
Democratic Republic of the Congo	29	2017 - 18	MICS
Djibouti	7	2019	EVFF
Dominican Republic	32	2019	MICS
Ecuador	22	2018	ENSANUT
El Salvador	20	2021	NHS
Eswatini	2	2021 - 22	MICS
Ethiopia	40	2016	DHS
Fiji	4	2021	MICS
Gabon	13	2019 - 21	DHS
Gambia	23	2019 - 20	DHS
Georgia	14	2018	MICS
Ghana	16	2022	DHS
Guatemala	30	2014 - 15	DHS

Guinea	47	2018	DHS
Guinea - Bissau	26	2018 - 19	MICS
Haiti	15	2016 - 17	DHS
Honduras	34	2019	MICS
India	23	2019 - 21	NFHS
Indonesia	16	2017	DHS
Iraq	28	2018	MICS
Jordan	10	2017 - 18	DHA (EDSA)
Kazakhstan	7	2015	MICS
Kiribati	18	2018 - 19	MICS
Kyrgyzstan	13	2018	MICS
Lao People's Democratic Republic	33	2017	MICS
Lesotho	16	2018	MICS
Liberia	25	2019 - 20	DHS
Madagascar	39	2021	DHS
Malawi	38	2019 - 20	MICS
Maldives	2	2016 - 17	DHS
Mauritania	37	2019 - 21	DHS
Mexico	21	2018	ENADID
Mongolia	12	2018	MICS
Montenegro	6	2018	MICS
Morocco	14	2018	ENPSF
Mozambique	53	2015	AIS
Myanmar	16	2015 - 16	DHS
Nepal	35	2022	DHS
North Macedonia	8	2018 - 19	MICS
Papa New Guinea	27	2016 - 18	DHS
Paraguay	22	2016	MICS
Peru	14	2020	ENDES
Philippines	9	2022	DHS
Russian Federation	6	2017	RPN
Rwanda	6	2019 - 20	DHS
Samoa	7	2019 - 20	MICS
Sao Tome and Principe	28	2019	MICS
Senegal	31	2019	DHS
Serbia	6	2019	MICS
Sierra Leone	30	2019	DHS
Solomon Islands	30	2015	DHS
South Africa	4	2016	DHS
Sri Lanka	10	2016	DHS

State of Palestine	13	2019 - 20	MICS
Tajikistan	9	2017	DHS
Thailand	17	2022	MICS
Timor - Leste	15	2016	DHS
Togo	25	2017	MICS
Tonga	10	2019	MICS
Tunisia	2	2018	MICS
Türkiye	15	2018	DHS
Turkmenistan	6	2019	MICS
Turks and Caicos Islands	23	2019 - 20	MICS
Tuvalu	2	2019 - 20	MICS
Uganda	34	2016	DHS
United Kingdom	0	2021	Office for National Statistics
United Republic of Tanzania	29	2022	DHS
Uzbekistan	3	2021 - 22	MICS
Viet Nam	15	2020 - 21	MICS
Zambia	29	2018	DHS
Zimbabwe	34	2019	MICS

The prevalence of female child marriages in several countries is depicted above (Table 1). The data was obtained from UNICEF global databases and shows the percentage of women aged 20 – 24 years who were first married or in union before the ages of 18, as well as the year(s) the data was collected and the survey from which this was obtained (UNICEF, 2024). Data was not available for 63 countries out of 195 countries. Data from 2015 to 2023 was included in the table above; data which referred to years outside of this range was not included in the calculation of regional and global averages and was not included in the table above. There were also countries which had data that differed from the standard definition of UNICEF child marriage measures, or only referred to part of the country, and was also not included in the table above (such as Argentina, Belgium, Belize, Benin, China and Denmark). If the data fell in the reference years, then the data was included in the global averages (UNICEF, 2024).

UNICEF has estimated that 45% of the child brides are from South Asia. A third of child brides live in India alone. Even though South Asia has seen big declines in the prevalence of child marriages, falling from 60% in 1997 to 45% in 2023, the region still bears the greatest burden compared to others (UNICEF, 2023a). The next biggest share is in Sub-Saharan Africa (20%), followed by East Asia and the Pacific (15%); Latin America and the Caribbean (9%); Middle East and North Africa (6%); Eastern Europe and Central Asia (3%) and other regions (2%) (UNICEF, 2023a). It is also estimated that the global prevalence of child marriages (percentage of women aged 20 – 24 who were first married or in union under the age of 18) is 19%, which is down from 23% from over a decade ago. However, at the current rates of progress, it is predicted that it will take around 300 years to end child marriage (UNICEF, 2023).

In South Asia, around one in four young women were first married or in union before their 18th birthday (United Nations Children's Fund, 2023). However, the levels of child marriage across the different region in South Asia, seem to vary considerably. The country with the highest level of child marriage in South Asia is in Bangladesh, with 51% of women aged 20 to 24 years were first married or in union before the ages of 18 (United Nations Children's Fund, 2023). The lowest level of child marriage rates is in Maldives at 2%. Even within countries, there seems to be a great difference in the levels of child marriages, across different regions. For example, in India, the region with the lowest prevalence of child marriages is at 0.1% and the region with the highest level of prevalence is 45% (United Nations Children's Fund, 2023). The exact regions were not disclosed in the report (United Nations Children's Fund, 2023). South Asia's overall reduction of child marriage levels has been driven the most by India. In 1998, the prevalence of child marriage was 55% and it has then since declined to 22% in 2023 (United Nations Children's Fund, 2023). Whereas, in Bhutan and Sri Lanka, the levels of child marriage have remained around the same for 25 years (30% and 15% respectively) (United

Nations Children's Fund, 2023). The reduction in the prevalence in South Asia could be attributed to the fact that national governments and the international community are increasingly recognising that child marriage is a serious barrier to developmental outcomes (Batyra & Pesando, 2021). Furthermore, the countries in South Asia have pledged their commitment to protect and ensure child rights and have made themselves accountable under international treaty obligations to prevent child marriage. Whereas some countries may have not seen a reduction in the prevalence of child marriages (Batyra & Pesando, 2021). One of the reasons could be that there is a poor implementation of the child marriage legislations. Poor co-ordination and monitoring amongst various stakeholders and limited awareness of the act in these countries are some of the reasons for why there is weak enforcement of the law (Batyra & Pesando, 2021).

Even though the highest rates of child marriage occur in LMICs, some developed countries also face this issue. 48 states in the United States of America still permit the marriage of children younger than the age of 18 (Wahi et al., 2019). Similarly, Scotland also allows for marriage from the age of 16 and the legal age of marriage in England and Wales was raised to 18 only recently in 2023 (Girls Not Brides, 2023; National Records of Scotland, 2024) . There are also cases of UK children going overseas for forced/child marriage, therefore it has been made a criminal offence, in England, Wales and Scotland, to take someone overseas to get them married, as per The Antisocial Behaviour, Crime and Policing Act (2014) (Foreign & Commonwealth Office and Home Office, 2013).

While child marriage disproportionately affects girls, research about the phenomenon occurring in boys is less well studied. A study by Gastón et al reported the prevalence of child marriage in boys was the highest in Latin America and the Caribbean (8.3%); East Asia and the Pacific (5.9%); Eastern and South Africa (5.0%); South Asia (4.3%) and West and Central

Africa (4.0%) (Gastón et al., 2019). The prevalence was less than 2 percent in the Middle East, North Africa, Eastern Europe, and Central Asia (Gastón et al., 2019). Unfortunately, no data was available for Western Europe or North America. These numbers may be under estimations, as there is a lack of nationally representative data regarding age the marriage among men (Gastón et al., 2019). The study used household surveys to pool together the prevalence of child marriage in boys, however, the data regarding the men are not always systematically included. Furthermore, the data from these national figures are from up to 10 years ago, and as a result this is not representative of the situation today (Gastón et al., 2019). In every country, child marriage is less prevalent in boys when compared to girls (Gastón et al., 2019). However, the same declining prevalence of child marriages in girls is also seen in boys. The highest reduction is in South Asia (11.9% to 4.3%) and in Middle East and North Africa (3.1% to 0.2%) (Gastón et al., 2019). More research is recommended to identify the drivers and consequences of child marriage in boys (Gastón et al., 2019).

1.3 Protective and risk factors associated with associated with child marriage

1.3.1 Risk factors

1.3.1.1 Social custom and belief

Child marriage is a complex issue with multiple drivers. Risk factors for child marriages typically relate to context-specific social pressures, customs, and cultural beliefs. A common cultural belief held in South Asia is that women do not have much of a role beyond homemaking (Scott et al., 2021). These customs and beliefs are also widely accepted and rooted in the wider community, which makes it natural for them to accept child marriage. Hence, this may lead parents to arrange marriages for their young daughters. Peers can influence and perpetuate the social norm of child marriage. Women who were married as children themselves, may convince and encourage their friends to accept marriage proposals (McDougal

et al., 2018). Older members of the family, such as grandparents, have a strong influence on household decisions (Kohno et al., 2020). Multi-generational houses seem to teach the adolescent girls that marrying at an early age is the right thing to do (Kohno et al., 2020). Since children may look up to and respect the elder members of her family, they are more likely to accept the marriage proposals. In case of the adolescent girl not following her father's decision, she may be cast out from the family and ostracised from her community (Kohno et al., 2020).

An example of a context-driven risk factor in South Asia is the demand for "dowry" (Caldwell et al., 1983). This practice involves the payment of money and/or assets from the bride's family to the groom's side, during the time of the wedding (Stroope et al., 2021). The amount of dowry to be paid by the bride's family is accounted by mainly two factors (Fattah and Camellia, 2022). The first is the age of the bride (the higher the age of the bride, the dowry increases) and the qualifications of the groom (the higher his educational qualifications and income/ nature of employment are, the higher the dowry) (Fattah and Camellia, 2022). Since the dowry is an added economic pressure in a low resource setting, this encourages the bride's parents to promote early marriage (Fattah and Camellia, 2022).

Early marriage is internalised as a family discourse and cultural norm in everyday life and conversation e.g. "*When I was younger, I remember my parents always telling me that I had to learn how to be a good wife and they used to say things like 'if you don't get married when you're still young, no one will want to marry you when you're old.'"* (Kohno et al., 2020). In some rural areas in Afghanistan, there is a practice called "bad" or "badal". This is a traditional practice where a child is engaged at birth or during infancy, and then married off at an early age. This is done to resolve any conflicts or disagreements between the families, and the child is exchanged to solve any disputes or to return any financial debts owed by the family (Raj et al., 2014). Therefore, it is ingrained in the culture that child marriage is a normal practice.

1.3.1.2 Protecting sexual chastity and religion

A study by UNICEF examined what drives child marriage in three South Asian countries: Bangladesh, Pakistan and Nepal (UNICEF, 2018). These countries were selected due to the high prevalence of child marriage in these countries and also the presence of long – term data which allows for examination of the trends in the data. This study used the Demographic Health Survey (DHS) which is undertaken every few years, and stores national data on the population, health, HIV and nutrition in over 90 countries (UNICEF, 2018). The study authors presented a conceptual framework based on macro – level (i.e. demographic, economic situation, labour market participation and social norms and beliefs) and micro – level (i.e. household characteristics, child characteristics and decision – making factors) drivers (UNICEF, 2018). The conceptual framework highlights how social norms and beliefs can exacerbate the prevalence of child marriage in the country. One example of social norms is to protect sexual chastity of the girl, by making them avoid pre-marital sex (UNICEF, 2018). The study analyses the drivers of child marriage, in particular the macro-level drivers. The total sample size used was 233, 673 (UNICEF, 2018). Some macro-level variable factors used were "women qualified work (reg.)", which was described as women in professional/ technical/ managerial occupation aggregated at the regional level), and "female decision power", described as who has the final say on making large household purchases (UNICEF, 2018). The outcome variable was a binary variable where a household either has a married member below the age of 18 or that they do not (UNICEF, 2018). A multi-level probit regression was carried out on the macro-level variables of child marriage. It was found that there was a 1.49 odds ratio for female decision power, with a p value < 0.05 (UNICEF, 2018). This variable can be representative of social norms, as females normally do not have decision making power in the household and the head of the household, is usually the male. This links the overarching theme of how social norms can drive child marriages to take place. The theme of social norms also then ties into how

protecting sexual chastity is a key factor to drive child marriages, in order to avoid pre-marital sex (UNICEF, 2018). However, this study did not mention whether the female decision power variable was either the female having the power, or that they did not have the final say. Therefore, the interpretation of the odds ratio could change with this. A strength of this study is that there has not been much research which have looked macro-level factors, as most of them have looked at how individual level characteristics are driving child marriages (UNICEF, 2018). One limitation of this study is that the data regarding the bride's original place of residence is missing, such as socio-economic demographics (UNICEF, 2018). As a result, it has been challenging for the authors to conclude what the situation was like when the parents married off their daughter, to help identify the drivers of child marriage (UNICEF, 2018).

Wanting their children to retain sexual chastity is another commonly cited reason for child marriages (Scott et al., 2021). A systematic review by Kohno et al synthesised qualitative studies regarding the key factors which drive child marriages (Kohno et al., 2020). They decided to only include qualitative studies, as these study designs can only truly reveal the perceptions of those who are affected by this practice and what they think the factors are which drive child marriages. A thematic synthesis methodology was used to synthesis the results. An inclusion criteria was used to select primary studies which look at the lived experiences of women who went through child marriages (below the age of 18) and only used qualitative methods in the analysis (Kohno et al., 2020). They excluded studies that are mixed – methods or a quantitative nature in study design. After searching for these articles in 9 databases, they included 12 studies. They developed third – order analytical themes from the primary analysis of the qualitative studies (Kohno et al., 2020). One of the themes that was developed was called "Social Norms" (Kohno et al., 2020). It was found that being unmarried, in several countries, was a threat to social order for men and women. This belief exists because there is a thought

that sex is only supposed to occur within marriage and if it does take place outside, then there would be risk and chaos to society (Kohno et al., 2020). Families want their unmarried daughter to avoid engaging in premarital sex or getting pregnant out of wedlock (Kohno et al., 2020). In more traditional societies, women are expected to upkeep the honour and dignity of their families. Therefore, to protect sexual chastity, early marriage is carried out. Moreover, parents may worry about sexual assault in humanitarian settings, and that there is no one around to protect them (Kohno et al., 2020). They may feel that the husband can protect their daughter more easily. As a result, engagement and marriage is carried out earlier to make sure that sexual chastity is protected (Kohno et al., 2020).

A multi-methods study utilised both quantitative semi- structured questionnaires and qualitative focus group discussions, as well as non – participatory observations to identify the role of "shame" and "honour" as factors which drive child marriages (Miedema et al., 2020). This study took place in 6 studies: Bangladesh, Nepal, Pakistan, Ghana, Burkina Faso and Senegal (Miedema et al., 2020). Two to four villages were selected in each country, which were in the same district and at some distance from each other. The population included in this study included village leaders; all girls who are at the age of 12 – 17; heads of households in which there are daughters or daughters – in – law at the age of 12 – 17; principals and teachers at schools nearby and staff at the nearest health facilities (Miedema et al., 2020). Data was gathered at the baseline (2016), midline (2018) and endline (2020), however the data in this study was only from the midline study, where 2718 young women (12 – 17 years) and 1791 household heads participated in the semi – structured questionnaires and FGDs (Miedema et al., 2020). One of the themes the study authors analysed from all the studies was "protecting family honour". Not being shamed and making sure their family upkeeps the honour and dignity is important in society. Families often experience pressure from society to safeguard

their honour and dignity, and therefore pressure their children into getting married early (Miedema et al., 2020). When the study authors asked household heads on whether they allowed their daughters to make decisions on their marriage, not much room was given to daughters in Asian households (Miedema et al., 2020). Out of 515 households in Bangladesh, only 21.7% household heads said their daughters can decide when to marry. Only 16.5% of household heads agreed that daughters can decide on who to marry and 15.9% agreed that the daughter can decide if they want to marry (Miedema et al., 2020). In contrast, out of 423 households in Burkina Faso, 91.3% household heads said their daughters can decide when to marry, 93.4% of household heads agreed that daughters can decide on who to marry and 91.5% agreed that the daughter can decide if they want to marry (Miedema et al., 2020). When carers were asked the reasons, they stated that early marriage meant that their daughter could not engage in premarital sex or get pregnant, which would mean their family honour would be lost (Miedema et al., 2020). The study authors concluded that more needs to be done so that the concept of "shame" and "honour" can be revised at grassroot levels. The ideas young people have, to change this narrative, would be the way for organisations to engage with the communities and families in the area they are working in (Miedema et al., 2020).

Another theme in the Kohno et al study was "Religious Beliefs" (Kohno et al., 2020). This was a key factor which drove parents to get their children married early. In societies where Islam is the majority religion, marriage is permissible as soon as the girl experiences menarche. It was observed that a wide range of participants from married and unmarried refugee women to their parents, religious leaders and teachers all thought that Islamic religious beliefs were among the main factors which influence child marriages to take place (Kohno et al., 2020). Religious beliefs caused the elders in the families, such as parents and grandparents to advise an adolescent girl to marry before the age of 18: "*My mother and grandmother advised me to*

marry as soon as possible because marriage is one of our prophet's recommendations" (Kohno et al., 2020). Parents seem to encourage their children to get married early, even if they are not ready psychically and mentally, as they were influenced by their religious beliefs. This may be because early marriage is looked at like a good thing in their religion and even recommended based on moral, social, and psychological grounds (Kohno et al., 2020). Protecting sexual chastity and early marriage is closely tied to religion. Both Christianity and Islam have strict rules that sex, and childbearing should occur within marriage. Therefore, when parents realise their children are engaging in pre-marital sex, they get their girls married early: "*My family believed that marriage could protect me from sin [sex outside marriage]*" (Kohno et al., 2020).

Critically, there is no single religion that is associated with child marriage. Other religions such as Hinduism and Sikhism also have child marriages occurring in them (Kohno et al., 2020).

1.3.1.3 Poverty

Poverty can be magnified by the cost of caring for an unmarried girl child, therefore families may decide to favour child marriage. Additionally, poorer households do not want to spend money on their daughter's education, as it does not bring them any immediate benefits. The household economic status of the families with child marriages was reported by a study, carried out in the rural areas of the northern region of Bangladesh (Fattah and Camellia, 2022). This was a mixed – methods study and had an initial phase of qualitative data collection and analysis, which was then followed by the quantitative phase (Fattah and Camellia, 2022). The qualitative phase utilised 6 FGDs and semi – structured interviews, while the quantitative phase used a structured survey questionnaire to collect data. 64 participants took part in the qualitative component of the study, and 3344 survey responses for the quantitative phase were recorded (Fattah and Camellia, 2022). For the qualitative component of the study, an inductive thematic analysis was used on the data from FGDs and interviews so that key themes could be identified.

Quantitative data was descriptively analysed using SPSS software (Fattah and Camellia, 2022). The qualitative results showed that a lot of participants identified poverty as a reason for child marriages. Most of them said that the poorer households have to get their daughters married off early so that financial constraints are eased off for the family (Fattah and Camellia, 2022). A local government official (male) reported: "*In our area, child marriage takes place mostly among families who live off government safety net schemes…[among] people who are destitute.* (Fattah and Camellia, 2022)". They also mentioned that parents from poorer households do not invest in their daughter's education but will save money or take out loans at high interest to pay for dowry (Fattah and Camellia, 2022). In terms of the quantitative data, they found that the highest proportion of girl child marriages (51.6%) and boy child marriages (59.6%) came from the poor households, as compared to the middle income or the wealthy households (Fattah and Camellia, 2022). 37% of child marriages occurred in middle income households and 2.3% child marriages occurred in the wealthy households (Fattah and Camellia, 2022). The limitation of this paper is that the study sample is only from one rural village in Bangladesh, which may not be representative of the other areas. More sampling of data from other areas, such as rural and urban, is needed. The analysis also is only descriptive, and so no causal effect can be assumed in this study.

The aim of a Moroccan study was to explore the experiences and perspectives of women in relation to the factors that drive child and forced marriages (Sabbe et al., 2015). This study used only qualitative methods, mainly FGDs and individual interviews. The data collection occurred from November 2011 to April 2012, in the Marrakech region. In total, 106 FGDs were held, with two to three women per FGD. Furthermore, 19 individual interviews with women were conducted. The individuals included in this study were female, Moroccan and 18 years of age and older. This would allow to understand experiences of women across all age

groups (Sabbe et al., 2015). The two groups of women were 18 – 29 years and 30 – 69 years. In FGDs, an intergenerational dialogue method was used to facilitate discussion in the group, so that constructive change of harmful practices could be promoted, between the younger and older generation of women (Sabbe et al., 2015). Qualitative data was analysed thematically, to develop a conceptual framework of themes and sub-themes. One of the main themes that emerged in the results was "Financial dependence". Financial dependence on the father was one of the most quoted reasons for leading to a child marriage, and this seems to play a significant role especially in families with a low socioeconomic status (Sabbe et al., 2015). Lack of resources remain one of the most cited reasons as to why girls are being married off early (Sabbe et al., 2015). An older women, age 40 years was quoted to say in an FGD: "*Girls and young women are forced to marry to alleviate the financial burden on the family, so the expenses for the daughter can be cut out of the family budget, which benefits the other children.*" (Sabbe et al., 2015) It was also highlighted by the participants that child marriage meant that they were not able to continue their education and future aspirations: "*Some fathers believe that investing further in their daughter's education is a waste of money. Even if she does study and get a job, she'll marry, and her husband will benefit from her income. So, the father thinks it's advantageous for him to marry her off earlier, so he doesn't have to pay for her education and the husband has to maintain her from then onwards*." (FGD 4 – older women and rural setting: 45 years) (Sabbe et al., 2015). A limitation of this study is that it has only taken place in Morocco, which means the results may not be generalisable to other demographics, therefore more research in other countries should also take place (Sabbe et al., 2015).

A study by Paul looked at the effect of education and poverty at the district – level, on the prevalence of child marriages, in India (Paul, 2019). Previous studies have looked at the

individual/ household – level of poverty and how it influences child marriage, however India has large variations of economic status across districts, and this has not been explored yet. This macro-level analysis could provide a different view and help with policies being implemented to prevent child marriage, especially in high prevalence areas (Paul, 2019). Data used in this study was from the 2015 – 2016 National Family Health Survey (NFHS) (Paul, 2019). The dependent variable in this study is the prevalence of girl child marriage. This was measured as the percentage of married women below 18 years of age among all the women ages 20 – 24 years (Paul, 2019). The independent variables are girls' educational attainment and household poverty. Girls' education was categorised into five categories: 1) no education/illiterate, 2) primary level, 3) secondary level, 4) higher secondary level and 5) college/ higher level of education (Paul, 2019). The household poverty was measured based on the ownership of numbers and kinds of consumer items, such as television, bicycle and car; type of drinking water; sanitation facilities and other characteristics related to wealth. Wealth status was also divided into five categories: 1) poorest, 2) poorer, 3) middle, 4) richer and 5) richest. Other independent variables included in the analysis were, urbanisation, religion (Hindu population), women autonomy and region. Multiple linear regression was used to analyse the data (Paul, 2019). The results showed that different districts of India presented with different prevalences of child marriages. The districts with the highest prevalence of child marriages in India was located in the East region, with a mean prevalence of 35.7% (Paul, 2019). The districts with the lowest prevalence of child marriage were in the North region; the mean prevalence was 18.4% (Paul, 2019). The multiple linear regression results showed that the districts that had the highest percentages of poorest and poorer households are significantly associated with a higher prevalence of child marriage (Poorest household = 0.307; p value = 0.028) (Poorer household = 0.318; p value = 0.052) (Paul, 2019). The middle household has a negative effect on the prevalence of child marriages (-0.199; p value = 0.063), as does the richer household (-0.527;

p value = 0.064) and richest household (-0.414; p value = 0.035) (Paul, 2019). This shows that households with higher amount of wealth do not have a high prevalence of child marriage. It has been concluded by the study authors that eliminating poverty would help combat the prevalence of girl child marriage. However, this study is cross-sectional in nature and therefore we cannot establish a causal relationship between poverty and child marriage (Paul, 2019).

Furthermore, the father in a family is usually seen as the head of the household and when they pass away, there is a heightened vulnerability for early marriage. If the family was already living in poverty, the girl child is then seen as a burden or risk for the family, due to the increased financial constraint (Kohno et al., 2020; Raj et al., 2014). This means the girl may be married off, especially if they get a "bride price" for her. But even if they do not acquire a bride price, the burden of not having to economically care for the child can be a relief in itself for many families. The same is reported in Eastern Africa, where marriage is seen as a relief for caregivers of orphaned girls, as they find it hard to provide for them (UNICEF, 2001).

1.3.1.4 Residence

Data from the most recent and approximately 10 years prior Demographic and Health Surveys (DHS) were used from four South Asian countries to analyse the trends, inequalities and drivers of early marriage from 2005 to 2018 (Scott et al., 2021). This study chose to focus on South Asian countries as this region is home to more child brides than any other region across the world. The countries were Bangladesh, India, Nepal and Pakistan. The equivalent to the DHS in India, called the National Family Health Survey (NFHS) was used (Scott et al., 2021). The sample size used for the analyses were 103, 150 women aged 20 – 24 years. Inequality analysis was used to determine the presence of inequality in early marriage according to the place of residence (urban or rural). Maps and equity plots were created to present the inequalities

between different regions within each country, by residence (urban or rural) (Scott et al., 2021). Regression models estimated the gaps in early marriage, by using the slope index or inequality (SII) for residence. It was found that each country had significant inter-regional variation for the prevalence of early marriage. This was highest in India (5% – 53% between different states), followed by Bangladesh (51% – 80%), Nepal (42% – 71%) and Pakistan (30% – 59%) (Scott et al., 2021). Results showed that the prevalence of early marriage is higher among women living in rural areas compared to urban areas (Scott et al., 2021). During the 2006 Indian NFHS, the rural to urban early marriage prevalence gap was 18% (45.9% - Urban; 63.9% - Rural), with a SII of 33.5 ($p < 0.001$) (Scott et al., 2021). The early marriage prevalence gap reduced to 11% during the 2016 survey (32.5% – Urban; 43.5% - Rural), with a SII of 22.0 ($p < 0.001$). India had the highest rural – urban gap for early marriages (18), while Pakistan was 13.1, Bangladesh was 10.5, Nepal at 4.5 for the earliest round of surveys (Scott et al., 2021). They found that the residence gaps in early marriage were smaller compared to wealth gaps, and also that this gap decreased less over time. It was hypothesised that this was due to a growing urban slum population in these countries (Scott et al., 2021). These populations have poorer social determinants of health such as education, wealth, and living conditions than those in rural areas, causing a higher prevalence of early marriage in these hotpots. As a result, the overall urban prevalence of early marriage is pulled closer to the rural prevalence (Scott et al., 2021). A strength of this study is that nationally representative data from the DHS were used, and it had large sample sizes. However, the survey did not sample unmarried women, and therefore a comparison could not be made. Other drivers and confounders of early marriage, such as sociocultural norms and women's empowerment could not be examined due to the lack of data regarding this (Scott et al., 2021).

The odds of being married off as a child is 16% more likely living in a rural area than living in an urban area (AOR = 1.16; 95% CI: 1.12 - 1.21), in Sub - Saharan African countries (Belachew et al., 2022). This study used data from the DHS, where a total sample of 121, 077 married reproductive – aged women were included (Belachew et al., 2022). The DHS is a nationally representative survey that is undertaken in each household and utilities face – to – face interviews on several measures such as, population, health and well – being (Belachew et al., 2022). The countries included in this study were Niger, Nigeria, Democratic Republic of Congo, Mali, Chad, Angola, Burundi, Gambia, and Burkina Faso, as they were in the top nine highly fertile sub-Saharan African countries (Belachew et al., 2022). A multivariable mixed-effect binary logistic regression model analysis was carried out, whereby the significant associated factors associated with early marriage were identified. This included factors such as the educational status of the women; the husband's education; occupation of the respondents; wealth status, as well as community level poverty, education and residence (whether urban or rural) (Belachew et al., 2022). Adjusted odds ratios were also calculated, with a confidence interval of 95%, to determine statistical significance (Belachew et al., 2022). This study has a large sample size and uses nationally representative survey data sets, which are the strengths of this country. However, this is a cross-sectional study design and therefore causality cannot be demonstrated. Other variables, such as cultural norms, behavioural patterns and social norms, as these factors have a major impact on early marriage (Belachew et al., 2022).

Similar results were reported by another study in India, which explored the prevalence of child marriage in a rural village (Pandya and Bhanderi, 2015). They undertook a community-based survey in the Ardi village of Gujarat. The survey was conducted from August 2012 to January 2013 (Pandya and Bhanderi, 2015). All the married women were surveyed to analyse the prevalence of child marriage in the village. A total of 750 couples were surveyed in this

population and those who were married for more than 10 years were excluded so that recall bias can be avoided. Child marriage was present in 540 couples (Pandya and Bhanderi, 2015). Therefore, the prevalence was 71.5% and this was significantly higher than the national average of 47% (Pandya and Bhanderi, 2015). It was also found that the majority of couples (88 out of 95; 92%) who had child marriages, the wife only had education until primary school level. This could be the case as access to education, particularly in rural areas which is more difficult. A limitation of this study is that it is a cross-sectional study and therefore, a causality and effect relationship could not be established. The authors conclude that despite child marriage having national laws against it, the practice is still taking place in rural areas and that more stringent enforcement of legislation is needed (Pandya and Bhanderi, 2015).

A mixed – methods study which took place in the Amhara region of the Federal Democratic Republic of Ethiopia looked at the prevalence and outcomes of child marriage (Abera et al., 2020). The fieldwork was carried out between January and April 2017. The quantitative component of this study used a cross-sectional survey to collect data on child marriage. The sample size used for the cross-sectional survey was 1278 (Abera et al., 2020). Qualitative methods, such as Focus Group Discussions (FDGs) and in – depth interviews, were used to examine women's experiences, community perceptions on child marriage. In terms of FGDs, two types were used to collect qualitative data. The first type of FGD was with child brides who had a mix of experiences, such as their age at marriage and their residential place, whether urban or rural. The second type of FGD had community leaders, elders, parents and non – governmental organisations working with those have been affected with child marriages (Abera et al., 2020). 14 FGDs were carried out in total, with 8 participants on average in each FGD. Altogether, 112 participants were involved in the FGDs. In addition, 6 in - depth interviews were also carried out with women who had the experience of being married as a child (Abera

et al., 2020). The study looked at all women who had their first marriage within the last 10 years, despite their current marital status, in the Amhara region. The study authors chose a timeline of 10 years, as they thought it would be best timeline to assess the changes in prevalence and outcomes of early marriage (Abera et al., 2020). The study results reported that urbanisation is inversely associated to the prevalence rate of early marriage (Abera et al., 2020). Interestingly by birthplace of the respondents, the prevalence of early marriage in rural areas was 40.6%, whereas there was a 19.3% prevalence of child marriage in those born in urban areas. Furthermore, by current residence of the respondents, there was a 48.3% prevalence of child marriage if they lived in rural areas, compared to a prevalence of 23.7% if they lived in urban areas. They also found that those women's occupation was farming had a 67.1% prevalence of early marriage (Abera et al., 2020). The authors hypothesised that this was due to the reason being early marriage is higher in rural areas, where farming is also the main method of employment. Rural areas seem to have higher levels of child marriage, regardless of the country that is being studied. This may be caused by greater adherence to traditional norms, and the lack of access to education, which hinders them from other opportunities (Abera et al., 2020).

1.3.1.5 Legal corruption

In countries where the practice of child marriage is prevalent and legal frameworks exist to punish those who marry individuals below the age of 18, corruption enables these marriages to continue (Kohno et al., 2020). Specifically, most countries have adopted 18 as the legal age for marriage for girls (United Nations Statistics Division, 2024a).

Table 2: The minimum age at marriage allowed legally (countries below the age of 18, only included)

Country	Income	Minimum Age of Marriage for Girls (years)

Albania	Upper middle income	13
Algeria	Lower middle income	13
Angola	Lower middle income	14 to 15
Argentina	Upper middle income	13
Armenia	Upper middle income	16 to 17
Australia	High income	16 to 17
Austria	High income	16 to 17
Azerbaijan	Upper middle income	16 to 17
Bahamas	High income	13
Bahrain	High income	13
Bangladesh	Lower middle income	13
Barbados	High income	16 to 17
Belarus	Upper middle income	14 to 15
Belgium	High income	13
Belize	Lower middle income	16 to 17
Bolivia	Lower middle income	16 to 17
Bosnia and Herzegovina	Upper middle income	16 to 17
Botswana	Upper middle income	Unknown minimum age
Brazil	Upper middle income	16 to 17
Brunei	High income	Unknown minimum age
Bulgaria	Upper middle income	16 to 17
Burkina Faso	Low income	14 to 15
Burundi	Low income	13
Cambodia	Lower middle income	16 to 17
Cameroon	Lower middle income	Unknown minimum age
Canada	High income	16 to 17
Cabo Verde	Lower middle income	16 or 17
Colombia	Upper middle income	13
Comoros	Lower middle income	13
Republic of the Congo	Low income	13
Croatia	High income	16 to 17
Czech Republic	High income	16 to 17
Djibouti	Lower middle income	13
Dominica	Upper middle income	16 to 17
Equatorial Guinea	Upper middle income	Unknown minimum age
Eritrea	Low income	Unknown minimum age
Eswatini	Lower middle income	Unknown minimum age
Gabon	Upper middle income	13

Greece	High income	13
Grenada	Upper middle income	16 to 17
Guinea	Low income	13
Guyana	Upper middle income	13
Haiti	Lower middle income	13
Hungary	High income	16 to 17
Iceland	High income	13
Indonesia	Lower middle income	13
Iran	Lower middle income	13
Israel	High income	16 to 17
Italy	High income	16 to 17
Jamaica	Upper middle income	16 to 17
Jordan	Upper middle income	16 to 17
Kazakhstan	Upper middle income	16 to 17
Democratic People's Republic of Korea	Low income	16 to 17
Kuwait	High income	14 to 15
Kyrgyzstan	Lower middle income	16 to 17
Laos	Lower middle income	14 to 15
Latvia	High income	16 to 17
Lebanon	Upper middle income	Unknown minimum age
Lesotho	Lower middle income	Unknown minimum age
Libya	Upper middle income	13
Liechtenstein	High income	13
Lithuania	High income	13
Luxembourg	High income	13
North Macedonia	-	16 to 17
Madagascar	Low income	13
Malaysia	Upper middle income	13
Mali	Low income	14 to 15
Malta	High income	16 to 17
Marshall Islands	Upper middle income	Unknown minimum age
Mauritania	Lower middle income	13
Micronesia, Federated States of	Lower middle income	13
Moldova	Upper middle income	16 to 17
Monaco	High income	16 to 17
Montenegro	Upper middle income	16 to 17
Morocco	Lower middle income	13

Namibia	Upper middle income	Unknown minimum age
New Zealand	High income	16 to 17
Nicaragua	Lower middle income	16 to 17
Niger	Low income	Unknown minimum age
Oman	High income	13
Pakistan	Lower middle income	16 to 17
Palau	High income	Unknown minimum age
Papa New Guinea	Lower middle income	Unknown minimum age
Paraguay	Upper middle income	16 to 17
Peru	Upper middle income	16 to 17
Poland	High income	16 to 17
Portugal	High income	16 to 17
Qatar	High income	13
Romania	Upper middle income	16 to 17
Russian Federation	Upper middle income	16 to 17
Samoa	Lower middle income	16 to 17
San Marino	High income	16 to 17
Saudi Arabia	High income	13
Senegal	Lower middle income	13
Serbia	Upper middle income	16 to 17
Sierra Leone	Low income	13
Singapore	High income	13
Slovakia	High income	16 to 17
Slovenia	High income	14 to 15
Solomon Islands	Lower middle income	Unknown minimum age
Somalia	Low income	13
South Africa	Upper middle income	13
Sri Lanka	Lower middle income	13
St. Kitts and Nevis	High income	14 to 15
St. Lucia	Upper middle income	16 to 17
St. Vincent and the Grenadines	Upper middle income	14 to 15
Sudan	Low income	13
Suriname	Upper middle income	13
Syria	Low income	Unknown minimum age
Tajikistan	Lower middle income	16 or 17
Thailand	Upper middle income	13

Timor-Leste	Lower middle income	16 or 17
Togo	Low income	16 or 17
Tonga	Upper middle income	14 to 15
Tunisia	Lower middle income	13
Türkiye	Upper middle income	16 or 17
Turkmenistan	Upper middle income	16 or 17
Uganda	Low income	13
Ukraine	Lower middle income	16 or 17
United Arab Emirates	High income	13
United Kingdom	High income	16 or 17
United States of America	High income	13
Uruguay	High income	16 or 17
Uzbekistan	Lower middle income	16 or 17
Vanuatu	Lower middle income	16 or 17
Venezuela	-	16 or 17
Yemen	Low income	13

Table 3: Minimum age of marriage for girls allowed in countries (with parental consent)

Country	**Income**	**Minimum age of marriage for girls (with parental consent) (years)**
Angola	Lower middle income	14 to 15
Argentina	Upper middle income	16 to 17
Armenia	Upper middle income	16 to 17
Bahamas	High income	14 to 15
Bahrain	High income	16 to 17
Barbados	High income	16 to 17
Belize	Lower middle income	16 to 17
Bolivia	Lower middle income	16 to 17
Brazil	Upper middle income	16 to 17
Brunei	High income	14 to 15
Burkina Faso	Low income	16 to 17
Cambodia	Lower middle income	16 to 17
Cameroon	Lower middle income	14 to 15
Canada	High income	16 to 17
Cabo Verde	Lower middle income	16 to 17
Colombia	Upper middle income	13
Djibouti	Lower middle income	13
Dominica	Upper middle income	16 to 17

Equatorial Guinea	Upper middle income	13
Eswatini	Lower middle income	16 to 17
Grenada	Upper middle income	16 to 17
Guinea-Bissau	Low income	16 to 17
Guyana	Upper middle income	16 to 17
Haiti	Lower middle income	14 to 15
Iran	Lower middle income	13
Jamaica	Upper middle income	16 to 17
Democratic People's Republic of Korea	Low income	16 to 17
Kuwait	High income	14 to 15
Latvia	High income	16 to 17
Lebanon	Upper middle income	13
Lesotho	Lower middle income	16 to 17
Mali	Low income	16 to 17
Malta	High income	16 to 17
Marshall Islands	Upper middle income	13
Micronesia, Federated States of	Lower middle income	13
Nicaragua	Lower middle income	16 to 17
Niger	Low income	14 to 15
Pakistan	Lower middle income	16 to 17
Palau	High income	16 to 17
Papua New Guinea	Lower middle income	16 to 17
Paraguay	Upper middle income	16 to 17
Portugal	High income	16 to 17
Qatar	High income	16 to 17
Samoa	Lower middle income	16 to 17
Senegal	Lower middle income	16 to 17
Solomon Islands	Lower middle income	14 to 15
Somalia	Low income	16 to 17
South Africa	Upper middle income	14 to 15
St. Kitts and Nevis	High income	16 to 17
St. Lucia	Upper middle income	16 to 17
St. Vincent and the Grenadines	Upper middle income	14 to 15
Sudan	Low income	13
Suriname	Upper middle income	14 to 15
Thailand	Upper middle income	13
Timor-Leste	Lower middle income	16 to 17
Tonga	Upper middle income	14 to 15

Türkiye	Upper middle income	16 to 17
United Kingdom	High income	16 to 17
United States of America	High income	16 to 17
Uruguay	High income	16 to 17
Vanuatu	Lower middle income	16 to 17
Yemen	Low income	13

However, a 2018 study reported that 23 out of the 191 countries globally, still legally permit for marriages under the age of 18 (Arthur et al., 2018) (Table 2). Furthermore, many countries still allow girls younger than 18 to marry with parental or judicial consent (Table 3). Data in the tables above was obtained from United Nations databases (United Nations Statistics Division, 2024a, 2024b). Therefore, parental or judicial consent is still used as a loophole for child marriages to still take place. Some examples of these countries include Anguilla, Jamaica, Ukraine, Liberia, Seychelles, and Mauritius (United Nations Statistics Division, 2024b). Moreover, it is reported that birth and marriage registration is rarely produced or checked. Since this is an important way to help prove whether the spouses are of legal age, officials are often given bribes to forge the birth and marriage certificates (United Nations Population Fund (UNFPA) and United Nations Children's Fund (UNICEF), 2020).

Other loopholes to find a way around the law include bribing the institutions or the person that is in charge, where the ceremonies occurred (Kohno et al., 2020; Sabbe et al., 2015). A qualitative study carried out in Morocco found that typically, the fathers of the couple speak up more during the official marriage licence signing (Sabbe et al., 2015). It is "*apparent that the fathers speak more than the couple [those getting married]*" (Participant 8: 26 years) (Sabbe et al., 2015). The victims of child marriage suggested that it would be better if only the future husband and wife to attend the ceremony and so their opinions can be more freely expressed in front of the judge, especially if one does not want to marry (Sabbe et al., 2015).

This will empower the girl to speak up if she is forced into the marriage and is under the age of 18. They also highlighted the lack of enforcement of the law in regard to the legal minimum age for marriage: "*transgressions occur regarding the legally established minimum age through bribery to speed up the marriage*." (FGD 5 – young women and urban setting: 25 years) (Sabbe et al., 2015).

1.3.1.6 Sustainability of intervention programmes

The prevention of child marriages has been prioritised by the UN for several decades now. Most interventions aim to decrease the proportion of girls married or delay the age at marriage (Kalamar et al., 2016). These programs occur all over the world, in different countries, such as Colombia, Mexico, Zimbabwe, India and Kenya (Kalamar et al., 2016). The main types of interventions that they use is cash transfers, which are given only if they attend school and payment of school fees if they attended school (Kalamar et al., 2016). There are also provision of sexual and reproductive health education and services, life – skills curriculum, community service, as well as parental education programs (Kalamar et al., 2016). The sustainability of early marriage prevention programs is a concern voiced by the victims of child marriage. Some intervention programs can be school based, as evidenced in Ethiopia (McDougal et al., 2018). Teachers may not be available during summer, as the schools shut for the holidays and so early marriages can occur again, as there is no deterrent (McDougal et al., 2018). This highlights the need for continuous availability of these programs for girls throughout the year and raises questions about the sustainability of such initiatives.

The Berhane Hewan program, which took place in the Amhara region of Ethiopia, tackles the high prevalence of child marriage in the area (Erulkar & Muthengi, 2009). This two-year program used a multi-intervention approach. Girls were recruited into support groups, which

had older female mentors. These women were equipped with informal education (basic numeracy and literacy); incentives for school attendance; and community conversations on early marriage, other harmful traditional practices, and reproductive health. The study used a baseline survey (2004) and an endline survey, which was two years later (2006) (Erulkar and Muthengi, 2009). These were taken in two areas; one of the villages was where the intervention took place, and another was the control group. It was reported that at the baseline survey, 9.5% of the girls aged 10 - 14 had been ever – married in the intervention site, and this dropped to 1.6% in the endline survey (Erulkar & Muthengi, 2009). Whereas, in the control site 13.9% had been ever – married and this rose to 22.1% in the endline survey. Even after adjusting for any girls that were married before the survey started, a similar pattern was reported. The percentage of girls married in the last year dropped in the project site, however this increased at the control site (project: 1.3% to 0%; control: 1.6% to 4.8%) (Erulkar & Muthengi, 2009). At the endline survey, it was found that girls aged 10 – 14 at the project site were less likely than girls at the control site to have gotten married (hazard ratio: 0.09) (Erulkar & Muthengi, 2009). This demonstrates that the Berhane Program helps prevent child marriages. However, more data is needed to understand what happens in the area once the intervention is removed, and whether the prevalence of child marriages returns to the baseline level (Erulkar and Muthengi, 2009). This will provide insights into the sustainability of the program. Another one of the limitations of this study is that the sample size of the girls from the control and the intervention sites do not seem to be representative. They recruited 272 girls from the control village, whereas only 188 girls from the project site for the baseline survey. For the endline survey, they included 462 girls for the project site and 464 from the control area (Erulkar and Muthengi, 2009). This may skew the results and may not be reliable.

1.3.2 Protective factors

1.3.2.1 Education

A study by Kamal et al analysed the trends and determinants of child marriage, among women aged 20 – 49 years, in Bangladesh (Kamal et al., 2015). The study used the Bangladesh DHS data from 1993 to 2011. The survey collected data from subjects in rural and urban areas, by using a cluster sampling protocol, which was carried out in two stages. The study excluded women aged 15 – 19 in this study, from data analysis, as many were still unmarried and would have altered the findings. The total sample in this study was 59, 792 ever – married women (Kamal et al., 2015). The independent variable in this study was child marriage. This variable was dichotomous, as it was categorised as either "child marriage", where marriage took place before the age of 18 or "adult marriage", and this was marriage that had occurred at or after the age of 18 (KAMAL et al., 2015). One of the dependent variables included in this study was women's and their husband's education. This was categorised into: no education, primary, secondary and higher. A multiple linear regression model was included to analyse the data in this study. The results from the Bangladesh study showed that the proportion of women married by age 18 was almost 95%, if their education was either no education at all or primary level education. This reduced to 85% if they had completed their secondary level education. Finally, if they had completed their higher-level education, the proportion of women married at the age of 18 was 40% (KAMAL et al., 2015). The proportion of women being married at ages below 18, was significantly higher if they had no education, primary level education or secondary level education compared to if they had higher education. The multiple linear regression model showed that a higher level of education among women and their husband's causes protection from girl child marriage ([women's education – no education: 1.00; primary: 0.82; secondary: 0.39; higher: 0.07] [husband's education – no education: 1.00; primary: 0.93; secondary: 0.80; higher: 0.66)]) (KAMAL et al., 2015). This shows that education for husbands, and especially

for women, is protective against child marriage. The effect of husband's education on child marriage can be interpreted to be slightly weaker than that of women's education. This study used data which was retrospective and so there may be under – reporting error, as well as social desirability bias. In conclusion, the authors of this study hypothesise that although higher education seems to have a protective role in child marriage, it is the skills that women gain from education that decreases the chance of child marriage (KAMAL et al., 2015). This includes factors like women gaining more control over household resources, and economic status, as well as personal behaviour, which gives them an increased bargaining power to decide the age at which they marry (KAMAL et al., 2015).

Table 4: The upper secondary school completion rate of girls in countries which have the highest child marriage prevalences

Country	**Region**	**Income**	**Child Marriage Prevalence (Female)**	**Upper Secondary School Completion Rate (%)**
Bangladesh	Sub - Saharan Africa	Low Income	51	27
Burkina Faso	South Asia	Lower Middle Income	51	2
Central African Republic	Sub - Saharan Africa	Low Income	61	5
Chad	Sub - Saharan Africa	Low Income	61	3
Guinea	Sub - Saharan Africa	Low Income	47	13
Mali	Sub - Saharan Africa	Low Income	54	12
Mozambique	Sub - Saharan Africa	Low Income	53	5
Niger	Sub - Saharan Africa	Low Income	76	1
South Sudan	Sub - Saharan Africa	Low Income	52	4

A study by UNICEF uses data to explore the relationship between education and child marriage (UNICEF, 2022). The data from this study are from the DHS surveys; Multiple Indicator Cluster Surveys (MICS) and other nationally representative surveys, from 2010 to 2021.The results showed that the higher the level of education for both women and men, the lower the prevalence is of child marriage. In countries where girls have a higher percentage of secondary school completion, the prevalence of child marriage is significantly lower compared to countries with lower rates of secondary school completion (UNICEF, 2022). The top five countries with the highest prevalences of child marriages have secondary school completion rates of less than 15% (UNICEF, 2022), shown above (Table 4). Niger has the highest child marriage prevalence for females, and the upper secondary school completion rate is 1% (Table 4). Furthermore, even if the country has a high prevalence of child marriage (40% or higher), the prevalence of women who were married before the age of 18 is lower in those who have completed secondary school education than those with only primary school education or no education at all (UNICEF, 2022). Furthermore, when girls marry early, they are less likely to remain in school. Out of those who married as a child, 87% were out of school and were aged 15 – 17 years, based on the analysis of 67 countries (UNICEF, 2022). Education is seen as the best way to protect those are risk of child marriage. Completing secondary school education is vital to protect girls from child marriage, as this helps them to build skills and open up pathways to employment. This data analysis seems to only be descriptive in nature, illustrating the association between child marriage and education. Therefore, causality cannot be demonstrated (UNICEF, 2022).

The study by Blum et al aimed to understand the attitudes of adolescents and parents regarding education, child marriage and the changes in matriculation for boys and girls over one generation (Blum et al., 2019). This study took place in Afghanistan during 2016. They used a

two – stage household sampling method across 26 districts in 6 provinces, where educational enrolment is low. The sample size was 910 adolescents, aged 12 – 15 years, and 454 parents (Blum et al., 2019). This was a quantitative study, and a survey was taken in the sample about: demographics, education, employment, marital status, beliefs of child marriages, interpersonal violence, media access, substance use and behavioural control/decision making. The results showed that adolescents are aware of the benefits of education, such as improved knowledge (for boys: 53%; for girls: 56%); secure good jobs (for boys: 43%; for girls: 44%) and being self-sufficient (for boys: 53%; for girls: 34%) (Blum et al., 2019). Even though majority of parents said they would like their children to complete secondary school education (100%), the views of the adolescents regarding their parental support of education was not the same. Boys perceived more of their parental's emotional and financial support, compared to girls (financial support: 88.05% vs. 69.55%, $p < 0.01$; emotional support: 89.05% vs. 68.33%, $p < 0.01$) (Blum et al., 2019). This highlights the gender inequality that still remains for girls wanting to continue their education, and not feeling supported by their parents. When parents were asked about the relationship between the timing of their daughter's marriage in relationship to their marriage, the results were more split. 37.89% agreed that marriage should occur after completion of secondary school and 31.71% indicated marriage should occur before secondary school (Blum et al., 2019). The study did not report what the remaining third thought about this. Interestingly, a greater percentage of fathers showed support for marriage to occur after completion of secondary school than mothers (51.01% vs. 27.73%, $p < 0.01$) (Blum et al., 2019). There are still gender inequalities remaining when it comes to education, and this needs to be improved for changes to be seen in the reduction of child marriages (Blum et al., 2019).

1.4 Health outcomes of child marriage
1.4.1 Reproductive health

Table 5: The adjusted odds ratios of having high fertility (3 or more births) for girls who have had child marriages

Study	Author	Country/ countries	Year	AOR (High fertility)
Decline in Child Marriage and Changes in Its Effect on Reproductive Outcomes in Bangladesh	Kamal	Bangladesh	2012	3.94 (3.38-4.58)
Girl Child Marriage and Its Effect on Fertility in Pakistan: Findings from Pakistan Demographic and Health Survey, 2006–2007	Nasrullah et al	Pakistan	2014	6.44 (3.34–12.41)
Prevalence of child marriage and its effect on fertility and fertility-control outcomes of young women in India: a cross-sectional, observational study	Raj et al	India	2009	1.30 (1.10 - 1.53)
Prevalence of child marriage and its impact on fertility outcomes in 34 sub-Saharan African countries	Yaya et al	Sub - Saharan Countries	2019	8.00 (7.52 - 8.46)
Associations between child marriage and reproductive and maternal health outcomes among young married women in Liberia and Sierra Leone: A cross-sectional study	Reisz et al	Liberia	2024	2.73 (1.29 - 5.82)

Associations between child marriage and reproductive and maternal health outcomes among young married women in Liberia and Sierra Leone: A cross-sectional study	Reisz et al	Sierra Leone	2024	3.93 (2.40 - 5.82)

There are many negative sexual and reproductive health outcomes associated with child marriages. Studies have shown that child marriages are associated with a higher fertility rate. Studies have estimated the effect of fertility on the odds of having three or more children, which is defined as having a high fertility rate, and is depicted in Table 5 (Kamal, 2012; K.G. Santhya et al., 2010; Nasrullah et al., 2014a; Reisz et al., 2024; Yaya et al., 2019). All studies found a significant relationship, and the highest adjusted odds ratio was found in 34 Sub – Saharan countries, including Niger, Chad, Guinea, Mali and Nigeria (AOR = 8.00) (Table 5).

The study by Kamal et al aims to analyse the prevalence of and the decline in child marriages and its effect on reproductive outcomes (Kamal, 2012). This study uses the DHS data from 2007 survey and takes place in Bangladesh. They hypothesise that child marriage is significantly associated with a lower age at first birth, higher fertility, child mortality, lower use of any contraceptive method before first childbirth, increased risk of unintended pregnancy and pregnancy termination (Kamal, 2012). The sample size of this study was 9, 572 ever – married women from the age of 20 to 49 years. Those that were aged between 15 and 19 years were excluded from the study as half of them were not yet married, and their inclusion may bias the findings. Bivariate and multivariate analysis took place to analyse the data (Kamal, 2012). This study was quantitative in its design. A logistic regression was also carried out to assess the effect of the dependent variables on child marriage. The background characteristics

show that the mean age of respondents in this sample was 32.4 years and the mean age at first marriage was 15.5 years. 81.9% of respondents were married off before the age of 18, which qualifies as a child marriage, and 32.2% of this were married off before the age of 14 (Kamal, 2012). Furthermore, the mean age at first birth for Bangladeshi women who married as a child was 17.0 years, while for those who married as an adult is 21.8 years. The mean number of children born to those women who married as a child was 3.3 and 2.0 for those women who married as an adult. Almost 70% of Bangladeshi women, who married in childhood, did not use any contraceptive methods before any childbirth, compared to the 49% that married in adulthood. 20.7% of women who married as children reported having their baby within first year of marriage, compared to 28.1% who married as adults (Kamal, 2012). The regression analysis which looked at the adjusted and unadjusted effects of child marriage on various indicators of the reproductive behaviours of Bangladeshi women. The adjusted odds ratio, for every increase of each year, age at first birth decreased by 19% among women who married as a child, compared to those who married as an adult (IRR=0.81, WCI=0.76-0.86). The number of child ever born, and child mortality increased by 45% (IRR=1.45, WCI=1.35-1.55) and 64% (IRR=1.64, WCI=1.44-1.87) respectively, among women who married as a child compared to those who married as an adult (Kamal, 2012). Women who married as a child were 21% (AOR = 1.21; 95% CI = 1.02 – 1.45) more likely to have their most recent pregnancy to be unwanted or mistimed and 16% (AOR = 1.16; 95% CI = 1.00 – 1.34) more likely to ever had a pregnancy terminated, compared to those who married as an adult (Kamal, 2012). The analysis was adjusted for sociodemographic factors such as maternal age, women's education, residence, religion, region and wealth (Kamal, 2012). Overall, it seems that women who married as a child, would likely to be pregnant for longer duration of the marriage, compared to those who married as an adult. This is why child marriages seem to be associated with a higher fertility. Programmes needs to inform teenage girls about the negative effects of early marriage, but also

health facilities need to be more accessible to those who are poor and in remote areas, for better health of both mother and child in Bangladesh (Kamal, 2012).

Similarly, another study by Raj et al, looked at the prevalence of child marriages among young adult women in India and associations between child marriage and women's reproductive outcomes (Raj et al., 2009). The NFHS – 3 was used in this study to obtain data, from November 2005 to August 2006. The sample size used in this study was 22, 807 married and unmarried women, who were of the ages 20 – 24 years. The analyses of fertility outcomes were conducted on the married sub-sample women who were aged 20 – 24 years (n=14,628, 64.1% of the total female sample in this age range) (Raj et al., 2009). Logistic regression models were constructed to assess the odds ratios (ORs) and 95% confidence intervals (CIs) for the effects of women who have had child marriages and fertility and fertility control outcomes. 25.2% of the participants (N = 22, 807) were married as a child, below the age of 18. It was reported that a large proportion of women (90.8%) who were married young, not using any contraception prior to having their first child and 23.9% of the women had their child within the first year of marriage (Raj et al., 2009). Linear regression models showed that women who married as a child were significantly more likely to report no contraceptive use prior to having children, compared with those who were married as adults (AOR = 1.37, 95% CI = 1.22 - 1.54). women who reported child marriages were 30% more likely to have given birth to 3 or more children (AOR = 1.30, 95% CI = 1.10 - 1.53), compared to women who married as an adult, as well as having a history of rapid repeat childbirth (AOR = 1.42, 95% CI = 1.25 - 1.61); multiple unwanted pregnancies (AOR = 1.43, 95% CI = 1.10 - 1.87) and to have experienced a pregnancy termination (AOR = 1.22; 95% CI = 1.06 - 1.41) (Raj et al., 2009). Women who married early, in India, are significantly likely to report high fertility, close birth spacing, as well as unwanted pregnancies and pregnancy termination. Therefore, the authors conclude that

the current programs which deliver prevention and targeting of child marriage, must also look to include family planning interventions (Raj et al., 2009). The limitation of this study is that the survey depends on self-reporting, which means there could be underreporting due to the social desirability bias. Also, the quantitative analysis in this study is cross-sectional, which means causality between child marriage and its reproductive outcomes cannot be assumed (Raj et al., 2009). Also, since this study only focused on young women in India, the findings cannot be generalised to women of other nationalities.

Another commonly examined outcome was the likelihood of giving birth within the first year of marriage. However, three studies found a negative relationship, where getting married before the age of 18 decreased the odds of giving birth within the first year of marriage (AOR = 0.67; CI 95% 0.50 – 0.63. AOR = 0.62; CI 95% 0.47 – 0.83. AOR = 1.03; CI 95% 0.95 – 1.12) (Kamal, 2012; Nasrullah et al., 2014a; Raj et al., 2009). Two studies did not find evidence of a relationship between child marriage and this outcome (Godha et al., 2013a; Raj et al., 2009). It also has been reported that child marriage increases the odds of early, teen, or adolescent pregnancy. Two studies estimated the effect of child marriage on mean age at first birth and found that those married before the age of 18 gave birth for the first time at younger ages, on average, than those who marred at older ages (Regression coefficient (RC) = -1.98; CI -2.36 - -1.59) (de Groot et al., 2018; Kamal, 2012). Girls who marry as children are likely to have children of their own at earlier ages, than compared to their peers who marry later than their 18th birthday (Fan and Koski, 2022a). There are mixed results on whether child marriage decreases the interval between births. There is no clear conclusion whether child marriages affect this (Fan and Koski, 2022a). This is important, as it is recommended by the WHO that there should be at least an interval of 24 months between a live birth and a subsequent pregnancy to reduce the risk of poor maternal health outcomes, such as maternal mortality,

premature rupture of membranes, anaemia and pre-eclampsia (World Health Organisation, 2005). This is important advice to follow, especially in areas with sub-optimal maternal health care. Therefore, more research needs to be done to address this issue.

Furthermore, there is evidence that child marriage is associated with unwanted, mistimed pregnancies as well as pregnancy terminations. A study using the nationally representative data from the Pakistan Demographic and Health Survey (PDHS) (Nasrullah et al., 2014b). The total sample in this study was 10, 023 women who were ever – married, aged 15 – 49 years. This study used a sample of ever – married women aged 20 – 24 years (n = 1, 560) to examine the differences in fertility outcomes between child and adult marriage (Nasrullah et al., 2014b). The survey asked participants about their demographics, such as age, level of education, area of residence, national region of residence and ethnicity. Other questions they asked the participants were on their wealth, and this was calculated based on ownership of consumer items. Wealth was divided into five categories, between 1 (poorest) and 5 (wealthiest) (Nasrullah et al., 2014b). The use of contraception was determined whether a participant had ever used a modern, traditional or any other method of contraception. Results showed that child marriage was significantly associated with unwanted pregnancy (AOR = 2.90; 95% CI = 1.75-4.79) and pregnancy termination (AOR = 1.75; 95% CI = 1.10-2.78) (Nasrullah et al., 2014b). Women who married as a child were significantly more likely to have three or more childbirth (AOR = 6.44; 95 % CI = 3.34–12.41) and have repeat rapid childbirth (AOR = 2.97; 95 % CI = 1.95–4.52), than when compared to women who married as an adult (Nasrullah et al., 2014b). Data was adjusted for sociodemographic factors such as participant age, level of education, region and area of residence, wealth index, ever used contraception and marriage duration (Nasrullah et al., 2014b). This study is cross – sectional, therefore causality cannot be established, and analyses may not be accurate due to social desirability bias (Nasrullah et al.,

2014b). This is due to the sensitive nature of the topic and could be subject to recall, as it may have happened a whole ago. The strength of this study is that it uses nationally representative data, however, it is only from one country and therefore may not be generalisable to other countries (Nasrullah et al., 2014b).

1.4.2 Sexual health

Marrying early has shown to be a risk factor for acquiring Human Immunodeficiency Virus (HIV), for young and adolescent girls (Glynn et al., 2001; Kelly et al., 2003; Nour, 2006; Nunn et al., 1994). There are several risk factors as to why child brides have a higher risk of contracting HIV (Kelly et al., 2003; Nunn et al., 1994). Firstly, they have higher frequencies of unprotected sex, as they need to get pregnant quicker to prove their fertility. Secondly, they may have reduced access to contraception and have less agency and power to negotiate safer sex. This is combined with limited access to information and services, as well as social isolation leads to an increase in the prevalence of HIV in child brides. They may also have older and sexually experienced husbands, meaning they are at a higher risk of contracting HIV and passing it onto their child brides.

A Kenyan study looked to determine the factors responsible for the disparity in HIV prevalence between young men and women in two urban populations in Africa, as there seems to be a higher prevalence of HIV in younger women when compared to young men (Glynn et al., 2001). In this study, possible reasons for this were explored in two cities which have high prevalence of HIV: Kisumu (Kenya) and Ndola (Zambia) (Glynn et al., 2001). A two – stage cluster sampling took place of the households in each city, where 1000 men and 1000 women were interviewed using a questionnaire, with full consent. All individuals were between 15 and 19 years of age and were included in the study if they had slept in the household the night

before (Glynn et al., 2001). The questionnaire asked for demographics and information on their sexual behaviours, such as marital status of partner, duration of each partnership they have had, number of sexual acts, and whether the partner has had any other partners in the last 12 months. Each participant's blood was also taken to test for HIV, Syphilis and Herpes Simplex virus type 2 (HSV – 2). Urine was also collected to test for gonorrhoea and chlamydia (Glynn et al., 2001). In addition, women took vaginal swabs so that it could be tested for *Trichomonas vaginalis*. HIV testing was undertaken anonymously and anyone who wanted to know their HIV status were referred for re-testing. This was done for free of charge and with full counselling. Furthermore, anyone with symptoms of STIs were also treated (Glynn et al., 2001). The results showed that in both sites, men married at an older age than women. The median age for marriage was 25 years for men and 19 years for women (Glynn et al., 2001). It was demonstrated that married girls have a 50% higher chance of getting infected with HIV than unmarried girls (Glynn et al., 2001). The prevalence of HIV-positive females aged 15 - 19, in Kenya and are ever married is 32.9% and 27% in Zambia (Glynn et al., 2001).

A more recent paper from 2013 also looks at the girl child marriage and its association with national rates of HIV across 97 countries (Raj and Boehmer, 2013a). This included countries from Sub - Saharan Africa, Northern Africa, Central and West Asia, South Asia, Eastern and South - Eastern Asia, Latin America and the Caribbean, Europe (Raj and Boehmer, 2013a). Northern America and Oceania. Data from UNICEF databases were used to obtain national – level information about child marriage, development indicators and maternal and child health, including HIV (Raj and Boehmer, 2013a). Prevalence data on child marriage was collected based on the proportions of women aged 20 – 24 years who were married before the age of 18; this data was collected over the period from 1998 to 2007. National HIV prevalence rates were also collected (this was defined as the proportion of the total population aged 15 – 49 years

who are HIV infected). The HIV prevalence rates were categorised into either high (1% or greater HIV prevalence) or low prevalence (lower than 1%) (Raj and Boehmer, 2013a). Confounder variables included development indicators such as measure of conflict in the country, national development in the country (i.e. human development index), as well as gender differences in national development (this is the gender related development index). Associations between child marriage and outcomes variables were carried out. A linear regression analysis was carried out between child marriage and MCH outcomes. The logistic regression analysis between child marriage and national HIV prevalence rates showed that there was a significant association (OR = 1.04; 95% CI = 1.01 – 1.07. P value < 0.001) (Raj and Boehmer, 2013a). However, the adjusted odds ratio did not show a positive correlation (AOR = 0.99; 95% CI = 0.94 – 1.03. P value < 0.001). There was a negative association between child marriage and contraception meaning those in child marriages do not use any type of contraception (B ± SE = -0.15 ± 0.11) (Raj and Boehmer, 2013a). The authors conclude that since after accounting for confounders, the adjusted odds ratio suggest that girl child marriage is not associated with higher prevalence of HIV. They suggest that areas which have a high prevalence of HIV, girl child marriage would be a risk factor. However, this may not be the case in areas that have low HIV prevalence and so eradicating girl child marriage may not be effective (Raj and Boehmer, 2013a). The limitation to this study is that it has not included all nations, and therefore the results are not generalisable. Furthermore, data collection of the rates across different nations are inconsistent. For example, there is some concern that the collection of highly stigmatised issues, such as HIV, is not done consistently across different countries. Better data collection of key health outcomes and girl child marriage rates across all nations, would provide higher quality research (Raj and Boehmer, 2013a).

1.4.3 Mental health

There is a growing body of evidence that suggests child marriages are associated with poorer mental health outcomes. Research in Niger and Ethiopia has found that there is a significant association between child marriage and mental health outcomes (including depression, anxiety, positive well-being vitality and general health) (John et al., 2019). They collected data from both countries from ever – married women between the age of 18 to 45 years, using a survey. They used a multi - stage cluster design which allows to collect broadly generalisable data. In Niger, data was collected from 2764 women and in Ethiopia, it was 4149 women (John et al., 2019). The survey collected information regarding the women's demographic background, health history (including mental health), relationship with her husband, experiences of intimate partner violence. Psychological well-being was measured using the Psychological General Well-being Index (PGWBI) and this was the dependent variable (John et al., 2019). The authors also included sub-domain variables, which includes anxiety, depression, self-control, vitality, positive well-being and general health. The independent variable was age at first marriage. Other variables include intimate partner variable, community – level norms, and a range of standard socio-demographic variables (John et al., 2019). In addition, qualitative data was also collected in Ethiopia. In – depth interviews were conducted with 32 ever-married 18 to 45-year-old women, from 2 regions (John et al., 2019). These women were married before the age of 18. 8 participatory focus group discussions were also carried out with mothers and fathers who had daughters between the ages of 8 and 17 years in an urban (Oromia) and rural (Amhara) site (John et al., 2019). These group discussions were used to understand the nuances of the events in a child bride's life, and how this affects their psychological well-being. The mean age of women in Niger was 29 years old and 30 years old in Ethiopia. It was found that 5.24% of Niger women were married by the age of 12 and only 19.36% of women remained unmarried by the age of 17. In Ethiopia, 6.78% of Nigerian women were married by the age of 12 and

35.77% remained unmarried by the age of 17 (John et al., 2019). The women from Niger had a higher sense of psychological well – being (Mean: 71.02; SD: 22.02) than women from Ethiopia (Mean: 66.35; SD: 22.73) (John et al., 2019). Results from the multivariate regression analysis show that there is a statistically negative relationship between girl child marriage and overall psychological well – being, in both countries. The earlier the age at marriage is, the more negative the relationship is with psychological well – being (Niger. Married at 17 years: β = -3.08, SE: 1.90; 16 years: β = -2.98, SE: 1.87; 15 years: β = -3.27, SE: 1.59; 14 years: β = -2.90, SE: 1.59; 13 years: β = -5.06, SE: 2.06; 12 years: β = -7.14, SE: 2.26) (John et al., 2019). Being married at the age of 12 or earlier means that the overall psychological well-being is reduced by 7.14% (John et al., 2019). These findings remained significant even after adjusting for confounders such as prevalence of child marriage and violence and average psychological well – being at the community. This suggests that very early marriage is detrimental to psychological well-being (John et al., 2019). The limitation of this study is that firstly, the measures of psychological well-being, and age at marriage were self-reported and therefore could be biased. Secondly, the cross – sectional nature of this study means that causality cannot be assumed (John et al., 2019).

Table 6**:** The adjusted odds ratio of mental health outcomes in girls who have had child marriages

Study	**Author**	**Country/ countries**	**Year**	**Mental Health Outcomes**	**Study Measures**	**AOR (95% CI)**
Child marriage in the United States and its association with mental health in women	Le Strat et al	United States	2011	Depression	Diagnostic Assessment and Mental Health Service Utilisation	2.20 (1.67 - 2.91)
Early Marriage and Negative Life Events Affect on Depression in Young	Fakhari et al	Iran	2020	Major depressive disorder	Beck Depression Inventory Scale II	2.77 (1.75 - 4.57)

Child marriage in the United States and its association with mental health in women	Le Strat et al	United States	2011	Any Mental Disorder	Diagnostic Assessment and Mental Health Service Utilisation	1.28 (1.09 - 1.52)
Child marriage in the United States and its association with mental health in women	Le Strat et al	United States	2011	Anti - social personality disorder	Diagnostic Assessment and Mental Health Service Utilisation	2.98 (2.03 - 4.37)
Child marriage and the mental health of adolescent girls: a longitudinal cohort study from Uttar Pradesh and Bihar, India	Aggarwal et al	India	2022	Depressive Symptoms	The Patient Health Questionnaire-9 (PHQ-9)	1.50 (1.10 - 2.00)

A narrative review by Burgess et al looked at the current evidence of the studies which describe the association of child marriage and its impact on mental health, including emotional distress (Burgess et al., 2022). A literature search was carried out with no language and publication restrictions on databases such as PubMed, Embase, PsycINFO, Scopus and Web of Science. Primary research (cross – sectional, quantitative and longitudinal surveys) were included that focused on the relationship between child marriage and mental health were included. Only articles which were published in English were included. 41 full – text articles were assessed for eligibility and 20 studies were excluded based on the studies not matching outcomes of interest (n = 14), population included those married over the age of 18 (n = 2) and did not discuss results for child marriage separately (n = 4) (Burgess et al., 2022). Quality assessment of the data was competed using the Joanna Briggs Institute Critical Appraisal Tools. It was assessed that all studies were that scored as high or medium quality. The characteristics of the studies showed that most studies included were from the Africa region (n = 9). The most common mental health consequence of child marriage was depression (quantitative studies = 3, qualitative studies = 1) (Burgess et al., 2022).

It was found that in Iran, early marriage increased the risk of depression by 2.77 times (AOR = 2.77; 95% CI = 1.75–4.57; P = 0.001), even after adjusting for factors such as substance abuse, unemployment, age, residence, other negative life events (Fakhari et al., 2022) (Table 6). In the United States of America, women who had married as a child had increased risk of dysthymia (persistent depressive disorder) (AOR = 2.20, 95% CI = 1.67 – 2.91), compared to women who married as adults (Le Strat et al., 2011a). The collated odds ratios of the likelihood of mental health outcomes as a result of child is depicted in table 6.

There were also 6 studies which described psychological distress as a consequence, 2 were about stress, 3 about suicidality and 1 on substance misuse and other mental disorders. Furthermore, psychological distress was another commonly studies mental health outcome among the included studies. This was defined as a range of symptoms such as depression, anxiety and PTSD (Burgess et al., 2022). In Jordan, it was found that early marriage and pregnancy contributed to distress due to loss of education, self – confidence, decision – making power, childhood and freedom of mobility. In terms of stress as a mental health outcome from child marriage, it was found that in Ghana there is a negative association between these variables (Coefficient = − 1.18; CI -1.84 –-0.51). The limitation of this narrative review is that the full review did not include any grey literature, as there is a lot of research done in the area by non – governmental organisations and other public sector organisations (Burgess et al., 2022). Also, publications in languages other than English were not included, which means there could be a selection bias. The key gaps in the evidence base identified in this study were mental health challenges linked to early married in humanitarian settings, or linked to sexual orientation, as well as disabilities (Burgess et al., 2022). Furthermore, mental health challenges due to early marriage in boys is also not explored in studies. There were also no studies exploring the intergenerational impacts of mental health within households, despite growing

evidence for this. The authors conclude that further research is needed to understand how gender inequity and power are embedded within families and it contributing to mental health outcomes in early marriage (Burgess et al., 2022).

Most papers that have studied child marriage have focused on the reproductive health outcomes. However, not many studies have explored the impacts of child marriage on mental health. Those studies that have explored this have been cross – sectional. An article by Aggarwal et al looks to examine the association between early marriage and mental health in adolescent girls using data from Understanding the Lives of Adolescent and Young Adults (UDAYA) (Aggarwal et al., 2023). The aims of this study were to understand if girls who already had mental health problems were more likely to enter child marriage, compared to girls who do not have any mental health problems. Secondly, to examine the association between transitioning into marriage and future mental health, while accounting for mental health prior to marriage. They also wanted to assess the association between childbirth and abuse within marriage and if this is linked to any depressive symptoms (Aggarwal et al., 2023). This study was conducted in the states of Bihar and Uttar Pradesh (UP), which are in the north of India, where child marriage is most prevalent. UDAYA is a longitudinal survey of 10 to 19-year-old adolescents in Bihar and UP. The baseline survey, called wave 1, took place between 2015 and 2016 and the end survey, called wave 2, was conducted between 2018 and 2019. In wave 1, the response rate was 92% and 20, 594 adolescents were interviewed. Of this 14, 625 were females and 9732 were unmarried females (Aggarwal et al., 2023). During collected of data at wave 2, 6% of female participants could not be tracked and another 6% were not willing to participate. A further 3% also gave inconsistent responses when asked about age and education and thus were excluded. The effective follow up rate was 81% (n = 11, 864) (Aggarwal et al., 2023). At both waves, the survey collected data regarding the respondent's sociodemographic,

such as education, work, literacy and numeracy levels, agency (e.g. aspirations) and exposure to mass and social media. They also asked about marital status, health including nutritional status and mental health, family life and sex education, as well as experience of violence. If a girl was married by wave 2, data on marriage, including the quality of the relationship with the husband, abuse and pregnancy was also collected (Aggarwal et al., 2023). Data was collected by trained NGO mental health workers. They were trained in ethical issues, as well as in administering the mental health section of the survey. The Patient Health Questionnaire – 9 (PHQ-9) was administered on young Indian adolescents, to collect data on depressive symptoms at both waves. In terms of results, out of 7864 unmarried girls that were interviewed at wave 1 and wave 2, 1825 girls (23%) were married off. These married girls were mostly from the state of Bihar (n = 1118, 61.3%); from lowest income households (60.6% - including quintiles 1- 3); scheduled caste, scheduled tribe and backward classes (88.2%); and with no schooling (11%) (Aggarwal et al., 2023). During both waves, a higher proportion of married girls had depressive symptoms, when compared to those who were unmarried (Wave 1 – unmarried and depressive symptoms (5.1%); married and depressive symptoms (8.6%) (Wave 2 – unmarried and depressive symptoms (10.1%); married and depressive symptoms (19.1%) (Aggarwal et al., 2023). Girls who had depressive symptoms (PHQ >9) at wave 1 had a higher chance of transitioning into marriage by wave 2 (OR = 1.5; CI 95% = 1.1 – 2.0), compared to those who did not have depressive symptoms (PHQ < 9). Additionally, girls who had either contemplated suicide (OR = 1.8; CI 95% = 1.3 – 2.5) or attempted suicide (OR = 3.3; CI 95% = 1.6 – 6.9) also had a higher risk of transitioning into marriage by wave 2, than those who did not contemplate or attempt suicide at wave 1 (Aggarwal et al., 2023). Furthermore, it was found that those girls who were married by wave 2 also had a higher risk of developing depressive symptoms (PHQ > 9) (OR = 2.0; CI 95% = 1.6 – 2.5); contemplation of suicide (OR = 1.5; CI 95% = 1.1 – 2.1) (Table 6) and attempted suicide (OR = 1.4; CI 95% = 0.7 – 3.0), compared

to those who remained unmarried at wave 2. Those girls who experienced abuse in marriage by their husbands were more likely to develop depressive symptoms (OR = 1.6; CI 95% = 1.2 – 2.2), compared to those who did not experience any abuse in their marriages (Aggarwal et al., 2023). No associations were found between age at marriage or childbirth and depressive symptoms. Therefore, this shows us that girls who marry early seem to have poorer mental health outcomes, compared from their baseline depressive symptom or indicators of suicide risk scores. Experiences of abuse perpetrated by husbands are associated with poorer mental health outcomes in newly married girls at follow up (Aggarwal et al., 2023). Childbirth in itself does not seem to be associated with any depressive symptoms. This is hypothesised that the birth of a child may reduce risks of poor mental outcomes, due to the mother being valued more within the family unit or that the abuse was caused due to pressuring the girl into producing a child (Aggarwal et al., 2023). The authors conclude that the social, emotional and mental health of girls need to be integrated into programs and policies that focus on child marriage (Aggarwal et al., 2023). Interventions that help adolescent girls from dropping out of school may also look to integrate mental health counselling (Aggarwal et al., 2023).

Even in the West, there have been reports of child marriage being associated with negative mental health outcomes (Le Strat et al., 2011b). Cross – sectional data was analysed from a population based, national representative sample survey, known as the NESARC (Le Strat et al., 2011b). This is a face – to – face survey of 43 093 adults (response rate: 81%). Women who were married at 17 years or younger were included in the data (n = 2181) and the remaining women were included in the adult marriage group (n = 16, 464) (Le Strat et al., 2011b). The Alcohol Use Disorder and Associated Disabilities Interview Schedule IV (AUDADIS – IV) was used by interviewers to assess lifetime and past 12– month axis I psychiatric disorders (Le Strat et al., 2011b). This included diagnoses such as mood and anxiety disorders, including

panic disorder, agoraphobia, specific phobia, social phobia, generalised anxiety disorder, depression, dysthymia and bipolar disorder (type I or II). The anxiety disorders were combined to create a single variable and so for mood disorders and psychotic disorders (schizophrenia, psychotic disorder) (Le Strat et al., 2011b). A variable for alcohol and drug abuse and dependence was also created. This included dependence on substances such as sedatives, tranquilisers, opiates, stimulants, hallucinogens, cannabis, cocaine, inhalants/solvents, heroin and other drugs. Other measures such as sociodemographic variables were also created, which included age, race, educational level, household income, region of residence and urbanicity (Le Strat et al., 2011b). Results showed that half of the women were married at 16 years or younger ((51.53% [1124 of 2181]) and of those, 1 in 9 (12.09% [136 of 1124]) were married at the age of 14 years (Le Strat et al., 2011b). The overall lifetime outcomes of psychiatric disorders (mood and anxiety disorders, substance dependence, and psychotic disorders) were higher for women who married before the age of 18 (53.09%), than those who married after the age of 18 (49.05%) (Le Strat et al., 2011b). Major depressive disorders and nicotine dependence had increased risks of 1.43 and 1.92, respectively, in women who had married as children, compared with women who married as adults. This was after adjusting for sociodemographic factors. The strongest association of 2.98 (AOR = 2.98; CI 95% = 1.99 – 3.88) was found to be in antisocial personality disorder. For the examination of 12-month current diagnoses, the strongest association was found for dysthymia (AOR = 2.20; CI 95% = 1.67–2.91) (Le Strat et al., 2011b). Child marriage seems to be associated with a broad range of psychiatric disorders even in the United States. Interestingly, they also found that women married early were the ones who were more likely to seek and access mental health services, compared with women who married in adulthood (AOR = 1.23; CI 95% = 1.40 – 1.48) (Le Strat et al., 2011b). This could be an important place of where the women are given interventions for mental health (Le Strat et al., 2011b).

1.4.4 Intimate partner violence

Many girls in child marriages are known to have experienced intimate partner violence (IPV). Globally, it has been estimated that girl who are married before the age of 15 are 50% more likely to have experienced IPV (physical/ sexual) compared to those who are married over the age of 18 (Girls Not Brides, 2019). IPV is defined as any behaviour within an intimate relationship (married, unmarried or live-in) that causes psychological, physical and/or sexual harm to those in that relationship, encompassing all types of controlling behaviour as well (Patra et al., 2018). This is different to the definition of domestic violence. Domestic violence is defined as the physical, psychological and/or sexual maltreatment of one family member by another. This includes marital rape, elder abuse and child abuse (Patra et al., 2018), whereas IPV is exclusively about the acts of abuse and aggression between intimate partners (Cunradi, 2010).

The study by Tenkorang et al, in Ghana, looks to explain the factors that link child marriage and IPV (Eric Y. Tenkorang, 2019). A nationally representative cross – sectional survey was used from a sample of 2289 ever – married women. This data was collected between May and August 2017. This survey used a multi – stage sampling strategy to select participants, similar to the method used by DHS (Eric Y. Tenkorang, 2019). The first stage used simple random sampling to select two districts from each of the 10 administrative districts. As a result, this yielded 20 districts. Systematic random sampling was then used to select two communities in each district, making sure there was representation of both urban and rural areas. Households were then randomly sampled, and respondents were selected from there. Respondents' consent was taken before the interview and all answers remained anonymous. The three dependent variables were physical, sexual and emotional violence. These were dichotomous, where the respondents either experienced violence or they did not. The other independent variables

included socio-economic characteristics (education level, employment status); gender norms (justification for wife – beating and husband's domineering attitudes) and autonomy (economic decision – making autonomy and family planning decision – making autonomy and sexual autonomy) (Eric Y. Tenkorang, 2019). Finally, the control variables included ethnicity, religion, age, area of residence (urban or rural). Women who married as children were at higher risk of experiencing physical violence (OR = 1.86), than women who married as adults (Eric Y. Tenkorang, 2019). After adjusting for the variables measuring autonomy, which are mentioned above, the risk of experiencing physical violence reduced (AOR = 1.77) (Eric Y. Tenkorang, 2019). This further reduced when accounting for socio-economic variables, (AOR = 1.56) such as education, employment status, and for gender norms and attitudes (AOR = 1.24). this shows that the association between child marriage and physical violence, is explained by factors such as socioeconomic characteristics, autonomy and gender norms. Similarly, women who married as children also were at higher risk of sexual violence (AOR = 1.33). However, when the authors added on variables measuring autonomy, there was no significant reduction in the odds ratio (AOR = 1.24) and the same was found for socio – economic variables (AOR = 1.27) and gender norms (1.12) (Eric Y. Tenkorang, 2019). Child brides were also more likely to experience emotional violence, compared women who married as adults (AOR = 2.5). Similarly to sexual violence, there was no significant reduction in odds after accounting for socio-economic characteristics, autonomy and gender norms (AOR = 1.98). It was also found in this study that those who married as children were more likely to endorse patriarchal norms of male power, than those who married as adults. This could explain why they are more vulnerable to IPV (Eric Y. Tenkorang, 2019). The study also found that women who marry as children have limited autonomy than those who married as adults. For those girls who married before the age of 18, they are likely to have decreased agency to make decisions, as compared to those who married as adults. This results in a power discrepancy.

The fact that the spouses may be much older than the girls, adds to the power struggle. The lack of choice on when and who to marry may lead to a decreased communication between the partners (Eric Y. Tenkorang, 2019). Furthermore, there is an increased pressure to have sex in the early years of marriage, from their husband and family members. This increasing conflict between the spouses leads to intimate partner violence (Tenkorang, 2019).

Intimate partner violence is linked to poorer mental health and low self-esteem, as well as injuries which are common amongst women who suffer from IPV (Coker et al., 2021; Stark et al., 2023). Women who have undergone physical IPV are significantly more likely to be injured (ARR = 2.88; CI 95% 2.20 – 3.70), compared to those who have not (Coker et al., 2021). Studies have reported that IPV is also associated with disabilities, long stays at the hospital, pregnancy loss and infant and child mortality (Fanslow and Robinson, 2011; Johri et al., 2011; Sabri et al., 2014; Tiruye et al., 2020). There is a significant association between women who have experienced IPV and them experiencing pregnancy loss, as shown by a study from Ethiopia (AOR = 1.54; CI 95% = 1.12 – 2.14) (Tiruye et al., 2020). Experiencing child marriage and IPV simultaneously is extremely challenging for girls who are under the age of 18, especially given their lack of maturity to handle these situations. Hence, more research is needed to help end child marriage by 2030 (Ahinkorah et al., 2022).

A study which uses data from 34 countries, including South Asia, Eastern and Southern Africa, West and Central Africa and Americas regions, reported the global odds ratio (OR) estimates for experiencing past year physical and/or sexual IPV (Kidman, 2016). Adjusted OR for marriage <15 years old is (AOR = 1.41; 95% CI = 1.30–1.52) and the adjusted OR for marriage at 15 – 17 (AOR = 1.42; 95% CI = 1.35–1.50), compared to those who married above the age of 18 (Kidman, 2016). Data from 34 countries were used for this study and was obtained from the DHS. Surveys were included in this study if they were conducted between 2005 and 2013

and those that included a domestic violence module (Kidman, 2016). The women were aged between 20 and 24 years, as this is the recommended age group used by the UN for measurement of the prevalence of child marriage (Kidman, 2016). dichotomous variables were created for both physical and sexual IPV, where the participants were asked if they experienced this in the past 12 months. A third dichotomous variable was also created to represent if participants had experienced physical and/or sexual IPV in the past 12 months. A variable for child marriage was also created, if participants were married below the age of 18. Finally, dummy variables were created for marriage below the age of 15 and marriage at 15 – 17 years (Kidman, 2016). Other confounding variables included age, education, area of residence, and wealth quintile. Logistic regression models were then used to analyse the relationship between the above variables in each country. The sample description results show that around 34% of the sample (women aged 20 – 24 who were currently married or cohabitating (N = 39, 877)) were married before the age of 18. Of this 9% were married before the age of 15 and 25% married between the ages of 15 – 17. The highest prevalence of child marriage (58%) was in Mali and the lowest prevalence (8%) was in Kyrgyzstan (Kidman, 2016). 26% of the sample who had married before the age of 18 had reported experiencing past year physical IPV by their partner, compared to 18% who married as adults. Past year sexual IPV was higher in women who married as children (19%), than those who married as adults (6%) (Kidman, 2016). This study confirms the association between child marriage and intimate partner violence, where being married as a child increased the odds of experiencing past year physical and/or sexual IPV (Married < 15: AOR = 1.41; CI 95% = 1.30 – 1.52) (Married 15 – 17: AOR = 1.42; CI 95% = 1.35 – 1.50) for women aged 20 – 24, compared to women who married as adults (Kidman, 2016). This is after accounting for confounding variables, such as age, primary education, rural residence and wealth quintile. Regarding regional estimates, the highest odds of past year physical and/or sexual IPV for women (aged 20 – 24), who married as children,

was in East Asia and the Pacific (Married < 15: AOR = 2.88; CI 95% = 1.55 – 5.38) (Married 15 – 17: AOR = 1.58; CI 95% = 1.09 – 2.29) (Kidman, 2016). Finally, the country estimates shows that the highest odds ratio for physical and/or sexual IPV for women (aged 20 – 24) married under the age of 15 was in Ghana (AOR = 3.60; CI 95% = 1.19 – 10.92), when compared to women who married as adults (Kidman, 2016). This study's main strength is that it has extended the number of countries included, compared to other studies that have focused on only one region of the world. They have also found that young women (ages 20 - 24) who married as children have higher odds of reporting past year physical IPV, when compared to women who married as adults (Kidman, 2016). Young women also had higher odds of reporting past year sexual IPV when married as a child, but the association between this was not as strong, when compared to physical IPV. The limitation of this study is that physical and sexual IPV measures are self – reported. Since this is a sensitive topic, women may feel to under report, causing an underestimation. Secondly, this is a cross – sectional study and therefore a causal relationship cannot be assumed (Kidman, 2016).

The association between child marriage and IPV in Sub – Saharan Africa was investigated using the DHS data for 16 countries, using the surveys between 2015 – 2019 (Ahinkorah et al., 2022). Countries were included in the study if DHS had information on child marriage and domestic violence data. The countries included were Angola, Cameroon, Chad, Benin, Mali, Nigeria, Burundi, Ethiopia, Rwanda, Tanzania, Uganda, Malawi, Mozambique, South Africa, Zambia and Zimbabwe (Ahinkorah et al., 2022). The child marriage variable was the same definition as used in the study above, where it was defined as women who are currently married or cohabitating and are aged between 20 to 24 years. A dichotomous variable was created for this, where respondents could be grouped into either a category, where they were married as a child (less than 18 years) or as an adult (18 – 24 years) (Ahinkorah et al., 2022). The dependent

variables used in this study were physical, emotional and sexual IPV, that had happened to them in the past 12 months. Other confounder variables used were educational level, place of residence, wealth status, media exposure and justification of violence. Bivariate and multivariate logistic regression models were run to analyse the association between child marriage and IPV (Ahinkorah et al., 2022). The prevalence of child marriage ranged from 13.5% in Rwanda (East Africa) to 77% in Chad (Central Africa) (Ahinkorah et al., 2022). The lowest prevalence of IPV was found to be 17.5% in Mozambique (Southern Africa) and the highest prevalence of IPV was 42% in Uganda (East Africa) (Ahinkorah et al., 2022). The adjusted odds ratio in Sub – Saharan Africa for young women who married before the age of 18 and the probability that they were going to experience IPV is 1.20 (AOR = 1.20; CI 1.12–1.29) (Ahinkorah et al., 2022). This was for the pooled dataset for all 16 countries. The results are consistent in its findings with previous studies, where child marriage is associated with IPV, in other countries such as Vietnam, India, Pakistan and other low- and middle-income countries (Hong Le et al., 2014; K.G. Santhya et al., 2010; Nasrullah et al., 2014c; Oshiro et al., 2011; Raj et al., 2010). Both child marriage and IPV are driven by cultural justification, and gender norms. The countries in this study may be differing culturally and so some countries are more tolerant of child marriage and IPV, compared to others. Therefore, the authors hypothesise this could be the reason for a high amount of heterogeneity in this study, as there is a diverse cultural context in different SSA countries (Ahinkorah et al., 2022). They also indicate that fighting these cultural and gender norms will end both child marriage and IPV (Ahinkorah et al., 2022).

1.5 Other consequences of child marriage

1.5.1 Female genital mutilation

Female genital mutilation is experienced by around 130 million women around the world and is performed in about 30 countries worldwide (Utz-Billing and Kentenich, 2008). Most of these countries are located in Africa. Outside of Africa, FGM takes place in the Arabian Peninsula, the Persian Gulf, in Islamic communities in India, Malaysia and finally in immigrant communities in countries like, Canada, USA, New Zealand, Australia and European countries (Utz-Billing and Kentenich, 2008).

There are four types of FGM. Type I ("sunna") involves the removal of the clitoral foreskin (Utz-Billing and Kentenich, 2008). Type II is where there is removal of the clitoris with partial or total excision of the labia minora. Type III involves removal of the clitoris, labia minora and majora, and sewing up of the orificium vaginae, and this leaves only a small opening for excretion of urine and menstruation blood. Type IV includes other types of FGM, such as pricking, piercing, stretching of clitoris or vulva and scraping of the vagina (Utz-Billing and Kentenich, 2008). There are many physical consequences of FGM that these women face. Even during the procedure, the women may face heavy bleeding, causing anaemia or death. Many girls face micturition problems after FGM (including urine retention) due to pain, infections, swelling, injury of the urethra and dysuria (Utz-Billing and Kentenich, 2008). When FGM is performed under unhygienic conditions and the performer does not have any medical knowledge, this can then lead to frequent infections of the urinary tract, uterus, ovaries (Utz-Billing and Kentenich, 2008). They can also acquire tetanus infections, gangrene and sepsis, all of which can cause death. Many women also suffer from dysmenorrhoea because blood accumulates in the partially or totally occluded vagina, which would be very painful (Utz-Billing and Kentenich, 2008). Women also have mental problems after FGM, such as

depression and psychosis. This can be due to the fact that they have not been informed properly about the procedure (Utz-Billing and Kentenich, 2008). FGM is condemned by international organisations such as WHO and UNICEF, as it denies the human right of freedom from bodily harm, therefore more must be done to abolish the practice of FGM.

Two practices, which are child marriage and female genital mutilation, which negatively impact the health and development of adolescent girls are commonly linked (Ahinkorah et al., 2023). This association between child marriage and female genital mutilation was examined in Sub – Saharan Africa. The study used nationally – pooled DHS data from 12 Sub – Saharan African countries. This included Burkina Faso, Chad, Ethiopia, Guinea, Kenya, Mali, Niger, Nigeria, Senegal, Sierra Leone, Tanzania and Togo (Ahinkorah et al., 2023). The survey was from January 2010 to December 2018. They included countries which had DHS data (2010 – 2018) on child marriage and FGM. The outcome variable was child marriage, defined by the guidance of UN, where the respondent was married as a child below the age of 18 years. The explanatory variable is FGM, and this was a dichotomous variable, where the participants responded either "yes" or "no" to if their genital area was 'nicked with nothing removed', 'had something removed' or 'was sewn shut' (Ahinkorah et al., 2023). The confounding variables in this study were age, educational level, employment status wealth quintile and exposure to mass media, as well as residence, community literacy level and community socioeconomic status (Ahinkorah et al., 2023). Data analyses was done using a two – level multivariable logistic regression. Results showed that the prevalence of FGM in all twelve countries was 52.19%, and highest prevalence was in Guinea (97.17%), while the lowest was in Togo (4.57%). The highest prevalence of child marriage was in Chad (78.06%) and the lowest prevalence (35.45%) was in Kenya (Ahinkorah et al., 2023). In the sample, results showed that 64.9% (n = 7697) also experienced FGM. 25.2% (n = 3717) were 20 years old and 51.0% (n =

7523) had no education. 63.4% (n = 9354) are currently employed and 69.9% (n = 10, 313) were residing in a rural area (Ahinkorah et al., 2023). The multivariable regression analyses show that those who had never experienced FGM were less likely to undergo child marriage, compared to those whose have experienced FGM, as shown by the odds ratio (AOR = 0.76; 95% CI 0.71–0.82) (Ahinkorah et al., 2023). This tells us that FGM is a pathway that leads to child marriage among girls in Africa. It seems that both these practices, of FGM and child marriage, are linked to the concept that girls need to be pure and to preserve their virginity for marriage (Ahinkorah et al., 2023). A commonly held belief in Sub-Saharan Africa is that being circumcised would prevent the woman from being promiscuous. The main strength of this study is that it uses nationally representative data from the DHS and also had a large sample size, which allows for generalisation of its findings to the countries in the study (Ahinkorah et al., 2023). The limitation of this study is that it has a cross – sectional design and so a causal relationship cannot be assumed between FGM and child marriage. Secondly, since FGM and child marriage are sensitive topics, there may be underreporting of these issues due to the social desirability bias (Ahinkorah et al., 2023).

Other previous studies have also shown that girl child marriage is linked to FGM (Karumbi and Gathara, 2020; Sakeah et al., 2018). The study by Sakeah et al used a cross – sectional study design to investigate the factors associated with FGM and its prevalence (Sakeah et al., 2018). This study took place in two districts and municipalities of Ghana (Bawku municipal and Pusiga District). The total recruited sample size for 830 women and they were between the ages of 15 and 49 years. The questionnaire was structured and collected information on socio-demographic characteristics, such as age, education, religion, father's religion, mother's religion, marital status, ethnicity, geographical location and household assets (Sakeah et al., 2018). The respondents were equally distributed from both districts (n = 415) to make the

sample size 830 respondents. Approximately, 57% of the women had received no education at all and 67% of the women were aged between 15 and 34 years old. Most women identified themselves as Muslims (Islam religion, 88.4%). 70% were married and 61% of the women said that they had undergone FGM. The most common reason given for FGM was to "continue a tradition" (43.86%), followed by to "control sexual desire" (29.04%), "for social acceptance" (19.88%) and "it's necessary puberty rites" (2.17%) (Sakeah et al., 2018). Majority of the women think the way to stop FGM is through "education" (75.9%), followed by "prosecuting practitioners" (22.53%) and "alternative puberty rites" (0.97%). The linear regression analyses showed that women who reside in Pusiga region are more likely to be circumcised than those who live in Bawku (AOR = 1.66; CI 95% 1.16 – 2.38) (Sakeah et al., 2018). Those who live in Pusiga may be crossing into Toga to be circumcised, as the practice is illegal in Ghana. Furthermore, Bawku is more developed than Pusiga and has more intervention programs, and therefore women may have received health education (Sakeah et al., 2018). This would have prevented circumcision due to the informed decision the women have taken. Similarly, those who have no education also were more likely to be circumcised than those with secondary education (AOR = 2.78; CI 95% 1.43 – 5.43) (Sakeah et al., 2018). Women who have higher education were less likely to be circumcised. This is because educated women are more likely to make informed decisions about their health. Therefore, making sure all women are educated beyond the primary level would help hugely in ending female genital mutilation. Finally, married women were also more likely to be circumcised compared to those who are unmarried (AOR = 3.82; CI 95% 2.53 – 5.76) (Sakeah et al., 2018). This is because FGM is seen as a rite of passage after puberty and as a precursor to marriage. FGM enhances their marriageability, due to it preserving the girl's virginity and to control their sexuality, and so are forced into being mutilated. The limitation of this study it is a cross – sectional design and so a causal relationship cannot be assumed between FGM and its other factors. Secondly, since FGM is a

sensitive topic, there may be underreporting of these issues due to the social desirability bias (Sakeah et al., 2018).

1.5.2 Loss of education

The loss of education is one of the main consequences of child marriage. Education has a huge impact on shaping an adolescents' life trajectory and the withdrawal of this can lead to disastrous consequences (Wodon et al., 2018). The economic cost to a country, if a girls do not complete all 12 years of education is around $15 trillion to $30 trillion dollars, due to lifetime productivity and earnings (Wodon et al., 2018). It has been estimated that on average, women with secondary school education earn almost twice as much as those with no education at all. Therefore, primary education is not enough. Furthermore, loss of education could lead to increased fertility rates and an increase in global population. It also decreases the women's overall decision-making ability and their agency within the household (Wodon et al., 2018). Finally, a lack of educational attainment for girls may lead to negative impacts on women's health. This may be as a result of women not knowing how to take care of themselves when sick or injured due to lack of knowledge. They may also be unaware of sexually transmitted diseases such as HIV/ AIDS, but also lack of modern contraceptive use. This may lead to insufficient birth spacing, unwanted pregnancies and abortions (Wodon et al., 2018).

Marriage shortens the girls' education, as supported by the evidence from several studies (Field and Ambrus, 2008; Lloyd and Mensch, 2008; Omoeva et al., 2014). A study in Nepal found that early marriage is one of the commonest reasons given for withdrawing from school (Sekine and Hodgkin, 2017). This study uses a cross – sectional survey design to assess the effect of child marriage on girls' school dropout rates, the associated risk factors and to identify the tipping point of school grades at which the risk of school dropout is at its highest. The study

used data from the Nepal MICS from 2014. The survey collects nationally representative data through a two – stage, stratified random sample design (Sekine and Hodgkin, 2017). The total sample size was 12, 162 women of reproductive age, from 15 to 49 years old. They then restricted this sample size to women who are aged between 20 and 24 years old. This is for the analysis of the prevalence of school dropout due to child marriage, as by age 20 all women will have dropped out or have finished secondary school. For the analysis of the association between child marriage and school dropout rates, and to assess the risk factors associated with school dropout due to married, the sample age was restricted to girls aged 15 – 17 (Sekine and Hodgkin, 2017). The independent variable used in this study was child marriage, where it was defined as a formal or informal union of a girl who is less than the age of 18 years. This was created as a dichotomous variable. The dependent variables included school attendance (Attending school ("1") vs not attending school ("0"), school dropout (Those who reported marriage as the main reason for school dropout ("1") vs unmarried girls attending school) (Sekine and Hodgkin, 2017). Other covariates used were sociodemographic characteristics, such as age, area of residence (urban vs rural), household wealth status, religion, education level and social class. Results showed that the prevalence of leaving school due to child marriage among girls who are between the ages of 20 and 24 is 39.8% (Sekine and Hodgkin, 2017). This was the most common reason given, after which it was 'did not like to study' (21.7%) and economic reasons (15.3%) (Sekine and Hodgkin, 2017). Regarding the tipping point grades, results show that the median grades of dropout were the seventh and eighth grades (Sekine and Hodgkin, 2017). This accounted for 42.8% together. It also showed that between 11 – 14% of girls dropped out of school due to child marriage during the 5^{th}, 6^{th}, 9^{th} and 10^{th} grades (Sekine and Hodgkin, 2017). The subsample of girls aged 15 – 17 from the Nepal MICS data totalled to 1631 girls. The results showed that most girls were unmarried in this population (88.2%). Of those that were married (11.8%), 68.8% (n = 111) were out of school. Whereas,

in those that were unmarried, 84.9% were attending school (Sekine and Hodgkin, 2017). The highest level of education in those that are married is secondary level (60.4%) and mostly lived in rural areas (92.3%). The logistic regression analysis showed that married girls were significantly less likely to attend school (AOR = 0.10; CI 95% 0.06 – 0.17), compared to unmarried girls, even after adjusting for sociodemographic characteristics mentioned above (Sekine and Hodgkin, 2017). Married girls were more likely to drop out of school, compared to their unmarried peers (AOR = 10.04; CI 95% 5.84 – 17.24), which remained significant even after adjusting for sociodemographic characteristics. Multivariate logistic regression was then carried out, where it was reported that an increase in age meant that girls were more likely to drop out of school (AOR = 2.81; CI 95% 1.73 – 4.56) (Sekine and Hodgkin, 2017). Girls who live in a household, where the level of education of the household head is none or only had primary education, were at a higher risk of dropping out of school, when compared to girls who lived in households where the household heads had secondary school level of education or higher (Sekine and Hodgkin, 2017). Interestingly, girls who are from a poor household wealth status did not have any association with girls dropping out of school (AOR = 0.95; CI 95% 0.52 – 1.76), when compared to girls who are living in a non – poor household wealth status. Those who belong to the Kirat religion were at a higher risk of dropping out of school as a result of child marriage (AOR = 2.31; CI 95% = 1.00 – 5.34) (Sekine and Hodgkin, 2017). These findings suggest that child marriage does have an effect on girls' education. The highest risk of dropping out of school for girls due to marriage is in grades 5 and 6, which can be targeted by policy makers to stop child marriage (Sekine and Hodgkin, 2017). The risk factors which cause girls to drop out of school due to marriage include living in a household with a household head who has very little education, as well as belonging to the Kirat religion (Sekine and Hodgkin, 2017). The authors of this study recommend that programmes should work with male relatives (such as fathers, fathers – in law and husband), as child marriage is trenched in

gender and social norms (Sekine and Hodgkin, 2017). This will help girls who are at risk of early marriages and stop them from dropping out of school. The strength of this study is that it uses nationally representative data that is measured in a standardised way. However, it only uses data from Nepal, so all results from this study may not be generalisable to other countries. Other limitation of this study is that it has a cross – sectional design, which means that it does not establish any causality between child marriage and loss of education for the girls (Sekine and Hodgkin, 2017).

The article by McCleary - Sills et all investigates the association between girls' education and child marriage, as well as the structural barriers that prevent girls' from completing their education (McCleary-Sills et al., 2015). They also examine the role of education and how this protects girls' voice and agency. It presented findings from two sets of data from World Bank Group (WBG) studies. Agency is defined as the ability to make choices about their own lives, such as pursuing education to a higher level (McCleary-Sills et al., 2015). Child marriage reflects the lack of agency in girls' lives, as they have been denied the right to marry at full age with free consent is denied (McCleary-Sills et al., 2015). The truncation of the girls' education can be contributed to gender norms that limit their agency. These norms are adverse because it includes attitudes, beliefs and rules that devalue a girls' education and advancement (McCleary-Sills et al., 2015). It was reported from a study that lack of education is a risk factor and an outcome of child marriage. Girls who have had a child marriage are 5% less likely to be literate and 8% less likely to have any education beyond secondary level (McCleary-Sills et al., 2015). This shows that education protects against child marriage, and therefore policies should encourage families to send their children to school beyond primary school level. Women and girls seem to experience deprivations of agency, such as limited control over household decisions and child marriage (McCleary-Sills et al., 2015). It was found from the

latest set of DHS data that 4 in 5 women experience a form of deprivation, such as condoning violence, child marriage and lack of control over household resources, from 54 countries. Furthermore, it was reported that 90% of women with no more than primary level education, suffer from at least one deprivation, and this reduces to 65% for those that have secondary level education (McCleary-Sills et al., 2015). Programs and strategies which increase the girls' likelihood of finishing school, such as financial incentives, expanding their economic opportunities and more gender – equitable schools, have been shown to prevent child marriage. Therefore, education is vital to stop child marriages, but it can also be an outcome of child marriage (McCleary-Sills et al., 2015).

1.5.3 Marital relationships

Whilst it is not only the husbands that cause verbal and physical violence, many girls married under the age of 18 also report about the abuse they face from their mothers – laws and sisters-in laws (Elnakib et al., 2022c). Once the child marriage takes place, in traditional societies, the bride moves into live in their in-law's house. This means that the power and control, over the girls', shifts to their mothers-in-law. In a qualitative interview, a married girl from Giza revealed this. "*A mother-in-law is supposed to be like a mother, but she seldom is. My mother-in-law once took me to the street and beat me in front of everyone."* (Elnakib et al., 2022c). This shows that the quality of marital relationships may not be great for those who married as children. This can contribute to more anxiety and stress for the girls, leading to poor mental health (Elnakib et al., 2022c).

A study which took place in Turkey looks to examine the relationship between child marriage and spouse and mother – in – law rejection, as well as marital adjustment (Cevheroğlu and Tutarel-Kışlak, 2023). Marital adjustment is defined as the accommodation of the spouses

(husband and wife) to each other, as well as the satisfaction and happiness of the couples they share with each other (Cevheroğlu and Tutarel-Kışlak, 2023). The sample from which this study took place consists of women married before and after the age of 18. 207 women were married before the age of 18 and 212 women were married after the age of 18, making the total sample size 419 participants (Cevheroğlu and Tutarel-Kışlak, 2023). The age of these women ranged from 18 to 60. A survey, called the personal information form, was developed by the study authors to collect data from the participants. The first questionnaire as part of this survey was called the Intimate adult relationship questionnaire – short form (IARQ/SF), which measures the acceptance or rejection perceived by the person from his/her partner. The higher score on this scale, the higher the perceived rejection was (Cevheroğlu and Tutarel-Kışlak, 2023). The second questionnaire was called the mother – in - law acceptance – rejection questionnaire (MLARQ/SF) and this measures the acceptance or rejection perceived by the person from their mother – in – law (Cevheroğlu and Tutarel-Kışlak, 2023). Again, the higher score on this scale, the higher the perceived rejection was. The final questionnaire included in this survey was the marital adjustment scale, consisting of 15 items. There were 8 questions on areas that measure agreement, 6 questions that measure conflict resolution and 1 question about general adjustment (Cevheroğlu and Tutarel-Kışlak, 2023). Higher scores indicate that marital adjustment is high. One – way variance analysis was carried out for each of the research variables in terms of marital age. Women who had married before the age of 18 had significantly higher scores in spousal rejection ($F = 16.71$, $p < 0.001$) and marital rejection ($F = 14.47$, $p < 0.001$), when compared to women who had married after the age of 18 (Cevheroğlu and Tutarel-Kışlak, 2023). The marital adjustment score was also significantly lower for women who had married before the age of 18 and those who got married after the age of 18 ($F = 85.05$, $p < 0.001$) (Cevheroğlu and Tutarel-Kışlak, 2023). Secondly, the marital adjustment scores were examined according to marital age (those married before the age of 18 and after

the age of 18) and the type of marriage (marriage of own choice and marriage that is arranged for them). A two – way analysis of variance (ANOVA) was performed for analysis of this. The results showed that the marital adjustment score was significantly higher for those that had married after the age of 18 (M = 38.0, SD = 11.8), than those who married before the age of 18 (M = 27.6, SD = 11.3) (Cevheroğlu and Tutarel-Kışlak, 2023). Similarly, women who had marriages of their choice (M = 36.6, SD = 12.7) had higher marital adjustment scores, than those that had arranged marriages (M = 27.1, SD = 10.3) (Cevheroğlu and Tutarel-Kışlak, 2023). this study showed that those who married before the age of 18 have lower marital adjustment scores between the girls and their spouses. This could be due to the fact the husbands are much older than the women they are marrying and so the men would be more dominant and controlling of their relationship (Cevheroğlu and Tutarel-Kışlak, 2023). This could lead to ineffective communication and increased conflict between them. This also reflects the fact that the study showed that women who married before the age of 18 perceived significantly higher spousal rejection than women who married after the age of 18. Spousal acceptance has been defined as the warmth, care, and love that they can express either physically or verbally (Cevheroğlu and Tutarel-Kışlak, 2023). Since women may have increased conflict and violence between them, especially in child marriages, this could indicate why the marital adjustment scores are low in those that married below the age of 18. Women who had a marriage of their choice after 18 had higher marital adjustment scores than those who had arranged marriages before 18 (Cevheroğlu and Tutarel-Kışlak, 2023). The majority of early married women have arranged marriages and so have lower marital adjustment scores. The women do not get to know their spouses for long enough before marrying (Cevheroğlu and Tutarel-Kışlak, 2023). Women who choose their own spouses have higher marital satisfaction than those women who had arranged marriages. This shows that women who have had child marriages may have worser quality of relationships with their husbands, but also with

their in – laws, therefore more must be done to help women in their marriages (Cevheroğlu and Tutarel-Kışlak, 2023). It is important for policy makers to take this into consideration and to help women increase their communication and problem – solving skills to have a better marital life (Cevheroğlu and Tutarel-Kışlak, 2023).

1.6 Child marriages in humanitarian settings

Child marriages are a violation of girls' rights, and can disproportionately impact girls in humanitarian settings, such as during armed conflict or natural disasters (Asadullah et al., 2021; Ellsberg et al., 2021). Humanitarian settings can be defined as those that include situations that encompass armed conflict, natural disasters, and disease outbreaks, where individuals are in urgent need of assistance and protection (United Nations, 2020a). In such settings, the breakdown of social structures and disruption of services create an environment where there is an increased risk of exploitation and abuse, including child marriages (Girls Not Brides, 2020).

Child marriage, a critical global concern, intersects with the dynamics of humanitarian crises. Emerging evidence suggests a correlation between humanitarian crises and heightened rates of child marriage (Bellizzi et al., 2021a). The reasons for why humanitarian crises drive child marriages are multi-factorial. The usual drivers of child marriage are usually also the reasons for it in humanitarian settings, except it may be more pronounced here. In the initial years after displacement after marriage, it has been reported that crisis – related poverty, experiences of sexual violence due to crisis, and loss of education, combined with the slackened enforcement of the law leads to an increase in the rates of child marriages (Presler - Marshall et al., 2020). From the perspective of the child bride's family, they want her to get married early due to several economic factors. This includes wanting for their daughter to secure food, as well as general security and household. They also want their daughter's living situation to improve, so

they can move out of refugee camps, for example (Presler - Marshall et al., 2020). They would also be at an advantage if their daughter marries and moves out, so that the number of people in their household reduces and so the burden on them to provide resources reduces, as well as for their daughter to escape any violence in society (Presler - Marshall et al., 2020). Several gender norms are also at play during humanitarian crises, which drives them to get their daughters to marry. Firstly, parents may not see any other opportunities for their daughters, in order to secure their future, other than getting them married and transitioning them into housewives or motherhood. Secondly, during crises girls are at an increased risk of sexual and gender-based violence and putting their bodies and reputations to be dishonoured. Therefore, fathers want their daughters to stay sexually pure and protect family honour, and so get them married early. Thirdly, there are also a lack of legal enforcement in countries they may be displaced to, and so it is easier to get their daughters married. Disruption to education such as during lockdowns due to COVID-19 pandemics, can also cause an increase in child marriages, as this is usually a protective factor (Presler - Marshall et al., 2020).

1.6.1 Prevalence of child marriage in humanitarian settings

Table 7**:** The state of fragility in countries with the highest prevalences of child marriages

Country	Region	Income	Prevalence of female child marriage	State of Fragility
Burkina Faso	Sub - Saharan Africa	Low Income	51	Fragile
Bangladesh	South Asia	Lower Middle Income	51	Fragile
Central African Republic	Sub - Saharan Africa	Low Income	61	Extremely Fragile
Chad	Sub - Saharan Africa	Low Income	61	Extremely Fragile
Guinea	Sub - Saharan Africa	Low Income	47	Fragile
Mali	Sub - Saharan Africa	Low Income	54	Fragile
Mozambique	Sub - Saharan Africa	Low Income	53	Fragile
Niger	Sub - Saharan Africa	Low Income	76	Fragile

South Sudan	Sub - Saharan Africa	Low Income	52	Extremely Fragile

The prevalence of child marriages in humanitarian settings is concerning. Nine out of the ten countries with the highest child marriage rates are considered either fragile or extremely fragile states (Table 7) (Girls Not Brides, 2016). Similarly, seven out of twenty countries with the highest child marriage rates face the biggest humanitarian crises (Girls Not Brides, 2020).

According to a study published by UNICEF, global evidence shows that there is an increase in child marriages, especially in humanitarian settings (United Nations, 2020b).During conflicts, there was a 20% increase in the prevalence of child marriages in Yemen and South Sudan (Buchanan, 2019). One of the impacts of the COVID-19 pandemic was child marriages. It was predicted that an estimated 500,000 more girls were at risk of child marriage in 2020, due to the pandemic and by 2025, the figure increases up to 2.5 million girls at risk (Edwards and Szabo, 2020). The impact of conflict and climate crisis on child marriages was reported by UNICEF. For every tenfold increase in conflict-related fatalities, child marriage increases by 7% and for every 10% change in rainfall due to climate change, the prevalence of child marriage increases by 1% (UNICEF and Girls Not Brides, 2023).

1.6.2 Causes of child marriages in humanitarian settings

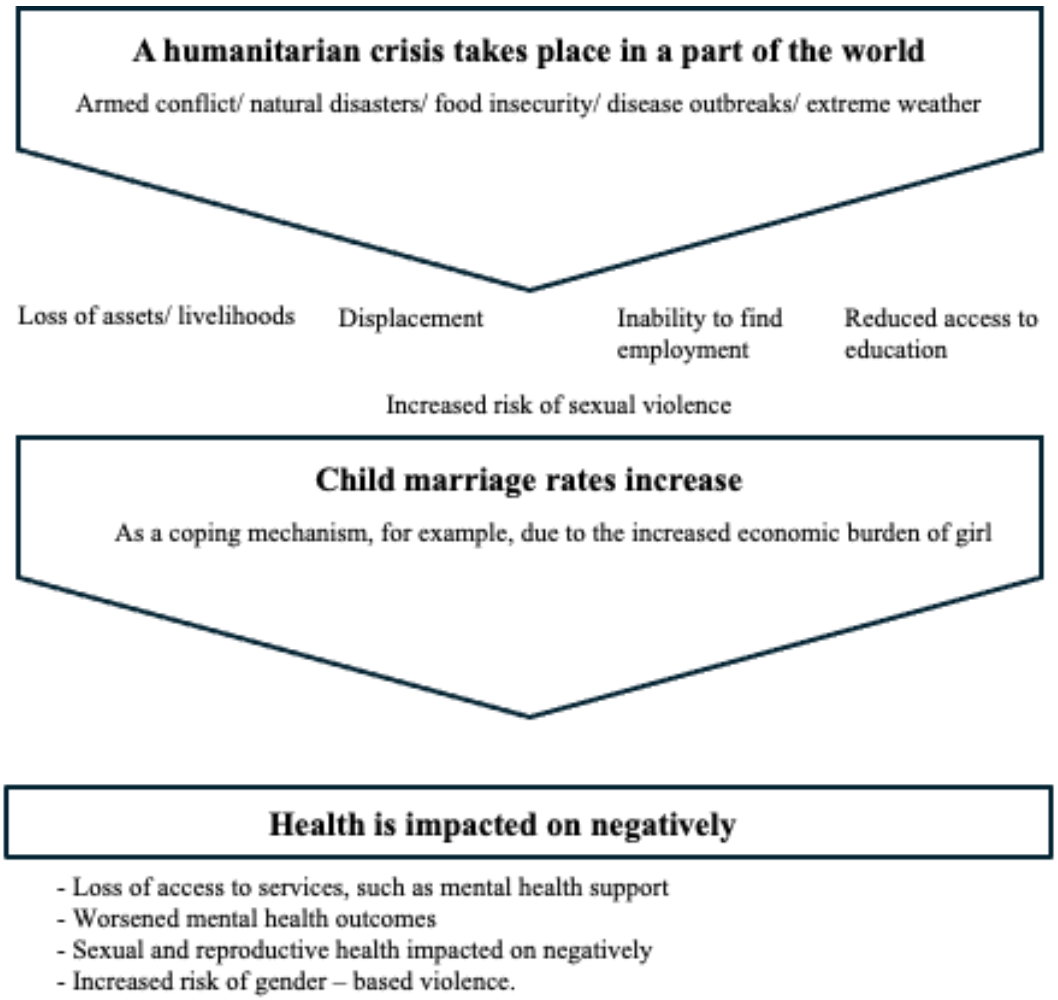

Figure 1: The relationship between child marriages in humanitarian settings and health outcomes.

Adapted from (Wodon et al., 2017)

The causes of child marriages in humanitarian settings are complex (Figure 1). Humanitarian crises, such as armed conflict and natural disasters, exacerbate already existing poverty. There is increased insecurity and a lack of access of services such as education, all of which are factors that also increase the risk of child marriage. Families may lose their livelihoods, their lands and have had to be displaced due to a crisis. They may feel that the only way to reduce the economic burden on them is to get their daughter to be married off (Mazurana and Marshak, 2019). This may be even more enticing in those cultures, where they get a bride price from the

groom family. Furthermore, during times of crisis, there usually is an increase in violence against women, such as sexual abuse and exploitation. Families with daughters may fear this for them and may feel that marriage as the best way to protect them (Mazurana and Marshak, 2019).

Child marriages increasing in prevalence in humanitarian settings can lead to worsened health outcomes due to the intersecting factors of poverty, loss of education and socio-economic inequalities. There may be a loss of access to services, such as mental health support (Ventevogel et al., 2015). This leads to worsened mental health outcomes (figure 1). It is known that people who face humanitarian settings such as armed conflict, displacement, natural disasters, and pandemics already have negative mental health outcomes, such as PTSD, depression and stress and anxiety (Tol et al., 2015). Similarly, girls who have experienced child marriage also have worsened mental health outcomes (Burgess et al., 2022). Very few studies report on what the situation is like for girls who have to face both at the same time.

Countries affected by conflict, such as Somalia, Sudan and Yemen, seem to have the highest maternal mortality rates, as well as the lowest rates of utilisation of antenatal care and contraceptive use (figure 1) (United Nations, 2015b). During humanitarian crises, it is harder for service providers to reach all of the population that needs the treatment. At the same time, the population may also find it harder to reach the essential health services, due to lack of resources. There could also be a collapse in the health care systems. It was estimated that in Syria a quarter of its health centres are inoperative and 27% of those still working are deemed inaccessible (United Nations, 2015b).

1.6.3 Types of humanitarian settings

1.6.3.1 Conflict – affected areas and displacement

The United Nations and International Non-Governmental Organisations (NGOs) are prioritising research related to child marriages in humanitarian settings. They have conducted multiple studies in Lebanon, Malaysia, India, and Indonesia (regarding Rohingya girls) and northern Cameroon and Nigeria (Mazurana and Marshak, 2019). In refugee camps and displaced areas, people may find themselves struggling with loss of assets and livelihoods, inability to find employment, debts, and reduced incomes. The girls may also feel secluded due to the social norms of the host community, that they have been displaced to. They may have less access to education and freedom of movement. This can cause families to see child marriage to alleviate the stresses of displacement (Mazurana and Marshak, 2019).

It has been reported that in Nyal, a village in South Sudan which has been highly affected by conflict, 71% of girls below the age of 18 experienced child marriage (Buchanan, 2019). This is in comparison to the national figure of 48% prior to the conflict (Buchanan, 2019). Reports from Damascus suggest families had no choice and were forced into allowing the marriage of their girls to those who were members of armed groups (Human Rights Council, 2020). Similarly, in Somalia girls were reported to have been abducted and forced to marry fighters of armed groups, even against the wishes of parents. Those who did object were threatened or killed (Bader, 2012).

A series of multiple studies focused on Syrian girls fleeing due to the Syrian conflict and how they have coped in Jordan and Turkey because of displacement were published in 2022 (Elnakib et al., 2022a, 2021b; Gausman et al., 2022; Shaheen et al., 2022). The study by Elnakib et al took place in three governates in Egypt (Elnakib et al., 2021b). These governates were selected, as they had the highest population of Syrian Refugees. Data was collected for around

6 months during 2019, and this was a qualitative study, where focus group discussions (with married and unmarried girls, and mothers and fathers), in – depth interviews (with married and unmarried girls and mothers) and key informant interviews (community leaders, health providers, humanitarians and legal experts) were undertaken (Elnakib et al., 2021b). It was reported that for many families that economic insecurity, exacerbated by the displacement, caused families to opt for child marriage for their daughter (Elnakib et al., 2021b). While some mentioned that "mahr" or bride price was important for their families to survive the economic insecurity, many also said that relieving their family the economic burden of taking care of their daughter and shifting it to the husband's was the most important reason as to why they got their child married early (Elnakib et al., 2021b). An unmarried girl from Giza, during an IDI was quoted to say *"This family had too many children, both girls and boys, and so the father was unable to support his girls. When a suitor presented himself, and was financially capable, the father decided to marry off his daughter. This way he could better support his other children; it reduced the burden."* (Elnakib et al., 2021b). Secondly, many parents also said that limited access to education played a major part in marrying their girls early. Challenges with school enrolment, during conflict and displacement, caused parents to resort to child marriage: "*I spent over a month and a half in a basement in Ghouta. Of course, my children were not in school, they could barely eat and drink. We didn't move for a month and a half from that basement. Then I came here, arriving three and a half months after the school year started. So, I couldn't enrol my children in school*" (Father, FGD, Giza) (Elnakib et al., 2021b). Additionally, parents also report their fear of their daughters being subject to sexual violence on the way to or in school. Many schools in Egypt were mixed gender, unlike in Syria, where they are originally from. A girl explained why her parents stopped her from going to school: *"I was in the eighth grade, and I was wearing the niqab. Because the schools here are mixed, I had a hard time, because of the boys. One time, a boy followed me home and jumped*

on top of me. My brother interfered and protected me, but since then I have hated school" (Married girl, IDI, Qalyubia) (Elnakib et al., 2021b). In contrast, many participants also reported positive impacts that have happened for them since coming to Egypt. Many girls felt empowered since coming to Egypt, as this country has more relaxed social norms with more opportunities to be in school. Parents also were more willing to keep their girls in school, since the host community accepted girls to stay in education. One girl reported: *"I would have never imagined that baba would let me study; he used to reject the idea of me leaving the house, but since we came here, he let me leave the house to go to school. He agreed because he saw that people in Egypt cared about education and allowed it, so he let me."* (Unmarried girl, IDI, Damietta) (Elnakib et al., 2021b). Key informants who were interviewed also agreed that Syrian refugees were becoming more like their host community and accepted their social norms. Women were more willing to seek employment opportunities, which was not the case in Syria. Humanitarian actors who were part of intervention programs, which stopped child marriages in Syrian refugees by including livelihood and economic empowerment components, explained this may have empowered women to seek employment (Elnakib et al., 2021b). This slowly is changing the deeply entrenched gender norms, that stop women from going to work. There are both negative and positive impacts of conflict – related displacement and how this affects child marriages. Therefore, more informed and targeted efforts to prevent child marriages in this setting are need (Elnakib et al., 2021b).

A mixed – methods study was conducted between July and August 2016, in Lebanon. Individuals had to be 13 years or older to be included (Bartels et al., 2018). A wide group of participants were selected for this study, including married and unmarried Syrian girls, married and unmarried men, as well as Syrian mothers and fathers. Interviewers collected data using a software called Sensemaker (a mixed – methods data collection tool), which were self –

interpreted stories (Bartels et al., 2018). Every participant shared a story about their personal experience or one they have heard about Syrian girls. They then were asked to analyse the stories by giving their own opinions on a variety of questions (Bartels et al., 2018). A total of 1422 participants took part in this study and shared their self – interpreted stories about the experiences of Syrian girls in Lebanon (Bartels et al., 2018). In terms of the results, it showed that there was a statistically significant difference in the way married and unmarried girls and mothers responded to dyad questions, compared to Syrian fathers and married and unmarried men. Syrian girls were more likely to report that they feel they are too protected, and if they are for example sexually harassed, then they are pressured into getting married (Bartels et al., 2018). A girl was quoted to say *"I was 12 years old when we were displaced to Lebanon. After we arrived, I was sexually harassed by an older man. When my parents found out about this, they forced me to get married. Now, I have a child, and I am pregnant. I am so unhappy."* (Bartels et al., 2018). In contrast, men often reported that Syrian girls were not protected enough. For example, a Syrian father explained why he is scared: "*The guys kidnapped her, raped her and forced her to get married to one of them... The mother and the girl had to move to another area and the mother stopped working because she was afraid of leaving her daughter alone. The girl was scared to even go out of the house... The family had a lot of rent to pay, so the mother eventually married her daughter to a 60-year-old man, in order to protect her and to decrease her living expenses."* (Bartels et al., 2018). This study offered a new perspective on how men and women viewed the reasons for child marriage; the men were more likely to stress financial resources as the cause: *"I know a girl who displaced from Sham to Lebanon. She wanted to continue her education, but she was surprised with the situation here. The public schools are not good, and the other schools are very expensive. She wasn't able to go back to school. So, her parents wed her to get some money. This is the situation of most Syrian families. They are selling their daughters."* (Bartels et al., 2018). Whereas women and

girls were also likely to mention about protection and education. There was also mention of how there was a sense of urgency to marry off their children, due to a strong need of wanting to protect them*: "I got married at the age of 14 because my parents feared for my safety. There was a lot of kidnapping in our village... Now I have marital problems... I advise parents to reject the idea of early marriage. It is not right. The girl should be allowed to live through her whole childhood. I will not approve of my daughters getting married at an early age; especially after my own experience."* (Bartels et al., 2018). Overall, we can see that the men and women of this community do not really agree on the opinions of why girls are getting married early. However, both agree that child marriage should not continue and is a negative experience for the girls. The authors found that the narratives importantly showed that girls were being married off quickly (Bartels et al., 2018). The girls did not get a chance to know the groom at all and married them after meeting them for a short time. Due to the vetting process being shortened, there is a higher risk for intimate partner violence (Bartels et al., 2018). The normal marriage practices of asking around for the groom and their families does not occur in the normal way, as well as taking time to vet the potential groom. The grooms were chosen due to their financial security they can provide their daughters with. This increases the risk for intimate partner violence and abusive marriages. this needs to be taken into consideration, when programs are piloted into the area, so that both child marriages and its linked outcomes of intimate partner violence can be stopped (Bartels et al., 2018). The authors also suggest that these interventions should be more specifically tailored towards men and women separately. For example, providing safe environment for the girls to go to school will help convince the mothers and emphasising that education is a financial opportunity for the girls in the future, will help the father understand too (Bartels et al., 2018).

1.6.3.2 Food insecurity

One of the drivers of child marriage is food insecurity. Food insecurity can be caused by conflict and climate change, amongst other things. A mixed – methods study reports the drivers of child marriage in food insecure communities in the Chiredzi district, Zimbabwe (Gambir et al., 2024). Due to a deepening economic crisis and the impact of climate change, Chiredzi district was classed as a level 3 "crisis" by the Integrated Food Security Phased Classification (IPC). This study used participatory – led storytelling, through the Sensemaker tool, as well as key informant interviews (KIIs). The stories told by the participants were then interpreted by themselves, through questions that are visual in nature (Gambir et al., 2024). The KIIs were undertaken with individuals who delivered or managed programming related to child marriages. Semi – structured guides were used to collect data on barriers and facilitators to accessing and delivering existing child marriage programs. Data was collected between January 2021 and April 2021. A total of 17 KIIS were conducted, and 12 females and 10 makes took part in this, who were working in NGOs, civil society organisations (CSOs), community – based organisations (CBOs), social service providers (SSPs), united nations actors and government officials who are involved in adolescent health and protection (Gambir et al., 2024). 1688 adolescents and adults participated in the Sensemaker study and approximately 43% were adolescents (n = 714). Only 7% (n = 48) were identified as married adolescents (Gambir et al., 2024). When the community members were asked about what they had experienced, food insecurity was cited as one of the main concerns by almost half (n = 729; 48%) (Gambir et al., 2024). It was reported that in those that had indicated food insecurity being present in their stories, survival/livelihood was most likely to be the risk factor for child marriage. Although food insecurity was a primary concern among community members, this was not the sole independent driver of child marriage. There are other factors like gender inequality and socio-economic inequality and poverty which drives child marriage and is

worsened during climate change and conflict (Gambir et al., 2024). Girls seem to initiate their own marriage if they feel it may help them escape their unmet needs, including limited food at home. An 18-year-old girl, from Urban Chiredzi, explains this in more detail: *"Sometimes the family will be facing food shortages that even the father sleeps on an empty stomach, in fact the whole family will be hungry because the family will be poverty-stricken. It's not that the family will be withholding food from their child deliberately; on the other hand, the child may perceive it the other way and opt to get married as a solution out of poverty and abuse."* (Gambir et al., 2024). Similarly, the parents may think child marriage is the best option, if that means they can lessen the economic burden on their household. It was also found that education would lessen the girls' risk of child marriage. Those who shared a story about how there was a lack of food also were more likely to mention that there was a lack of access to education than those who did not share that there was a lack of food (Gambir et al., 2024). In conclusion, it seems that food insecurity is another risk factor that leads to child marriage and is strongly present in parents' decision making. Programming should take into consideration food insecurity as a factor of deprivation, which increases the risk of girls' child marriage and help target this with food aids and school feeding programs (Gambir et al., 2024).

There is a limited selection of studies about the association between food insecurity and child marriages (Fu, 2022; ICRW and Girls not Brides, 2016; Tumalu, 2021). A report by Plan International looked at the linkages between child protection and food insecurity (Fu, 2022). It was reported that child marriage was likely to be a coping mechanism used by families for food insecurity. In Ethiopia, it was found that child marriages increased by 51% in drought affected and food insecure zones (Fu, 2022). Following the 2010 famine in Kenya, Plan International reported that there was an increase in child marriages (Fu, 2022). The girls were married to older men as second wives, so that families have lesser people to feed. They also found that

the adolescent girls have reduced agency and decision –limiting power over who and when to marry. As reported in the Zimbabwean study (Gambir et al., 2024), this report also mentions that girls may willingly initiate their marriages (Fu, 2022). Girls from Nepal reported that getting married allowed them to have more to eat than when they used to live with parents (Fu, 2022).

Food insecurity can also be a consequence of child marriage. The cycle of food insecurity is perpetuated by child marriage. Those who have married early before the age of 18, also seem to be experience food insecurity. Girls who are married may face abuse from husbands and in – laws, by denying them food (Fu, 2022). A report by Girls Not Brides recommends the integration of child marriage prevention into food insecurity programmes (ICRW and Girls not Brides, 2016). The authors hypothesise that since both food insecurity and child marriages have similar drivers, such as poverty, socioeconomic inequalities, and poor education, then these programs can help reduce child marriages too. Assisting the girls with skills such as agricultural training for both increased consumption and income generation; life skills and empowerment training, nutrition education, provision of agricultural livestock, will help them to be self-reliant. Furthermore, land ownership and inheritance usually only is given to men in many countries, where child marriage is prevalent. This forces women to be dependent on men for access to food. The report suggests that the programmes should also help with legal frameworks so that women have equal access to land (ICRW and Girls not Brides, 2016).

1.6.3.3 Natural disasters

Similarly to conflict and displacements, natural disasters such as climate change increase the vulnerability of girls, pushing them into child marriages (Pope et al., 2023). The effects of climate change are predicted to worsen over time. Therefore, the impacts of climate change

such as natural disasters, drought and food insecurity will heighten the risk for child marriages (Pope et al., 2023). A study in Bangladesh showed that bride price encourages parents to marry their child off earlier. Since climate change causes economic shocks to the family, they need a respite in the form of a payment (Asadullah et al., 2021). Another study used annual rainfall data from the Demographic Health Survey (DHS) in Bangladesh from 1999 to 2014 and looked at its association with child marriages (Tsaneva, 2020). There was an increased risk of child marriages in rural areas, when there was a higher number of dry months, compared to when there was more average rainfall. Many families in rural areas engage in agriculture and that is their main source of income. These people are affected the most in terms of wealth they generate during these periods, and so more families may push their children into marriages (Tsaneva, 2020).

Similarly, Indonesia is another country that faces the risk of natural disasters including droughts, floods, and earthquakes. The country also has one of the highest prevalence of child marriages in the Asia Pacific region, at 22.82% in 2015 (Statistics Indonesia & UNICEF., 2016). A study found that for every one-point increase in the frequency of natural disaster in an Indonesian village, this increases the probability of child marriage by 0.1% (Kumala Dewi and Dartanto, 2019). They also show the effect of having an early warning system. The probability of child marriage decreased by 2.9% if an effective early warning system is available at the village level (Kumala Dewi and Dartanto, 2019). They also hypothesised that households respond differently to income loss and economic hardship due to natural disasters, depending on their socio-economic situation. If the community does have a good mitigation system, such as an early warning system, then the family may only have a small economic loss. The household may try to find other sources of income, such as borrowing or selling assets. However, when there is no early warning system, or it is not as efficient, then the economic

loss would be much larger. The household's economic burden might then be reduced by cutting expenditure, such as on education or cutting the household. This could then lead to child marriage (Kumala Dewi and Dartanto, 2019). The same was also seen during Cyclone Aila in Bangladesh, where daughters were married early to curtail their economic and food burden on the household (Polly et al., 2022). Similarly, during a drought in Malawi, it was reported that child marriage was higher in incidence in socio-economically disadvantaged towns (Caruso et al., 2022). Young women who§ were exposed to droughts were 5 percentage points more likely to be married by 18, than those living in non – drought areas (Caruso et al., 2022).

In several studies, it was also reported that there is an increase in the rates of sexual violence during natural disasters, particularly in camps or temporary shelters (Ahmed et al., 2019; Doherty et al., 2023). Shelters are often felt to not be sufficiently safe and lack privacy (Ahmed et al., 2019). There also seems to be no official way of reporting abuse. Therefore, parents get their daughters married off early to protect them and also to upkeep family honour (Doherty et al., 2023).

It seems that there is a link between environmental crises and child marriage. Drivers of child marriage, such as poverty and socio-economic inequality, is made worse by natural disasters, such as floods. It seems that environmental crises seem to push families towards child marriage, as it reduces the burden on them. More studies and evidence on child marriage prevention should consider how natural disasters and environmental crises affect this phenomenon.

1.6.3.4 The COVID-19 pandemic

It has been predicted by Save the Children that up to 2.5 million girls around the world are at risk of child marriage in the next 5 years, as a result of the COVID – 19 pandemic (Cousins, 2020; Edwards and Szabo, 2020). The COVID – 19 pandemic may have threatened to have

undone 25 years of work done to reduce child marriages. The prevalence of child marriages may increase through economic shocks, school closures, death of a parent and loss of education. A study ran predictive models to predict the impact of COVID-19 on the prevalence of child marriage (Yukich et al., 2021). They used five countries (Ethiopia, India, Bangladesh, Nigeria, Brazil) to run their model on. These countries were chosen as they already account for half of the global prevalence of child marriage. Prevalence was defined as the percentage of women between the ages of 20 to 24 years who were first married or in union before the age of 18. The incidence was also predicted; this was defined as the number of child marriages occurring each year. The model used in this study was called the Markov model, which was previously used to project the cohorts of girls either marrying early or the risk of mortality, from age 10 to 24 (Yukich et al., 2021). A conceptual framework for the impact of the COVID – 19 pandemic was also developed based on a literature review, which looked at how previous outbreaks, natural disasters, extreme weather events, conflicts and famines have affected child marriages (Yukich et al., 2021). They theorised five different causes of how the pandemic increases the risk of child marriages. These were: 1) death of a parent, 2) interruption of education, 3) pregnancy risk, 4) household income shocks and poverty and 5) reduced access to programmes and services (Yukich et al., 2021). The findings of this study are mixed as to whether the death of a parent(s) increases the risk of child marriage. The COVID – 19 pandemic initially caused the most deaths in the older population, which are likely to not be parents of children younger than 18 years of age (Yukich et al., 2021). Therefore, for this model it has been assumed that the death of a parent from COVID has little direct impact on the risk of a girl getting married early. They also hypothesise that economic shocks in South Asian countries increase the risk of child marriage, but only by 1% (Yukich et al., 2021). The authors hypothesise that economic shocks may affect child marriage primarily in countries that have bride price traditions and so this could increase the rate of child marriages (Yukich et al., 2021).

Similarly, interruption of education has also been thought to increase rates of child marriages. Adolescent pregnancies were not modelled to have an effect on child marriages, as most pregnancies occur within existing unions (Yukich et al., 2021). Interruptions of programs and interventions related child marriages, during COVID-19, may lead to an increase in child marriages (Yukich et al., 2021). Furthermore, there are three scenarios used for projection in the model. The baseline scenario uses historical rates of child marriage decline, and no pandemic effects are added on. The second scenario is in which the effect of the pandemic is unmitigated on the prevalence of child marriage. Therefore, no programs or interventions are expected to be delivered during this time to reduce child marriages. The final scenario is mitigated, where the programs and interventions which are delivered reduce the impact of COVID – 19 on the prevalence of child marriages (Yukich et al., 2021). The models and all the scenarios were run for each of the five countries. All countries seem to have an increase in the prevalence of child marriages, during the unmitigated scenario, from the year 2020 to 2035(Yukich et al., 2021). This takes a couple of years before it returns back to the baseline. Particularly, in Nigeria, Ethiopia and Brazil there is an increase in the prevalence of child marriage for 5 years. Secondly, the results showed that the number of excess child marriages is predicted to be from 1.8 million to 2.7 million, even in the mitigated scenario (Yukich et al., 2021). These projections, although alarming, need to be interpreted considering other socio-economic situations developing in the country. events such as natural disasters and conflicts may affect child marriage rates (Yukich et al., 2021).

A study by World Vision carried out the Youth Healthy Behaviour Survey (YHBS) in Ghana, Ethiopia, India, and Zimbabwe (Shaw et al., 2021). There is an optional child marriage questionnaire on the YHBS. One of the questions the survey asks girls and boys is to place themselves on a scale from one to eight; this shows how the adolescents view their lives. The

scale can then be categorised into the children either as thriving, struggling, or suffering (Shaw et al., 2021). The results showed that a child's ladder score is significantly associated with their marital status ($p<0.001$) (Shaw et al., 2021). The higher their ladder score (the children view themselves as thriving), the less likely they are to be married. A child that places him or herself in the thriving category is 37.5% less likely to be married as a child, than a child who is placed in the struggling category (Shaw et al., 2021). COVID – 19 pandemic adversely affects hunger, access to education and parental support for children and therefore the risk of them marrying early is increased (Shaw et al., 2021).

Pandemics, such as COVID-19, can exacerbate also food insecurity. This can be due to economic shocks, such as loss of jobs. The increase in poverty due to COVID-19 has meant that families are unable to meet household food needs (Shaw et al., 2021).Families then adapt to the situation by selling off livestock, spending less on meals and in extreme cases, by marrying off their daughters. This means that the bride price received can be used to feed other family members. Unfortunately, evidence has shown that marriage does not relieve hunger for the girls. Women who have married before the age of 18 seem to have poorer nutrition than women who married after the age of 18. (Efevbera et al., 2019) The results from the study by World Vision also showed that children who experienced hunger in the four weeks prior to the survey were more likely to be married than children who had not experienced hunger (Shaw et al., 2021). Those who are already experiencing life in fragile context and humanitarian settings causes an increase poverty and therefore hit harder with acute hunger.

One of the main impacts of the COVID-19 pandemic was the closure of schools worldwide. It has been estimated that at point in 2020, over 1.6 billion children were out of school (Shaw et al., 2021). The study also found that children who are not in school are 3.4 times more likely to be married before the age of 18, than their peers who are in school (Shaw et al., 2021). In

the absence of education to build their futures, children are increasingly being pushed into marriage. Furthermore, being in school prevented children from getting married, since teachers, schools and other social workers could have spotted the child being pushed into marriage and therefore prevented it (Shaw et al., 2021).

Parental – child relationships seem to have deteriorated during the COVID-19 pandemic. Studies have shown that parents' stress levels have increased, and the amount of caregiving has decreased over the course of the pandemic (Adams et al., 2021). Common stressors included changes in children's routines, worrying about COVID-19, as well as family finances. The study reported that as caregiver support and encouragement increases, there is a significant decrease in the likelihood of child marriage ($p<0.001$) (Shaw et al., 2021). They found this relationship to be particularly true in Ethiopia, where children who report feeling supported by their caregivers are 40% less likely to get married than their peers (Shaw et al., 2021). More than 50% of children thought that their caregivers provided necessities only some or none of the time and over 20% were never supported with schoolwork (Shaw et al., 2021). This compounded stress experienced by the child, may make them think that child marriage is a better alternative (Shaw et al., 2021). Furthermore, more than half of the children in this study thought that their parents and carer provided them with necessities only some of the time, or none of the time. Over one in ten reported that they never received any money from their parents. Boys were significantly more likely to say that caregivers support and encourage them ($p < 0.05$) and provide them with the necessities ($p < 0.01$) (Shaw et al., 2021). A 17-year-old girl explains her situation, when she decided to get married when she was only 15 years old. Unfortunately, her father died when she was young, and her mother remarried. She went to live with her grandparents and her uncle's constant bullying caused her to marry early: "*Some days they would find me eating a meal and would take the plate from me…. They would beat me for*

no reason." (Shaw et al., 2021). This shows how important parent – child relationships are, and how they need to be preserved during humanitarian crises to stop child marriages. (Shaw et al., 2021)

1.7 Justification of research

There is a gap in the literature regarding the health consequences of child marriages in humanitarian settings. While there is a growing body of research on child marriage, including its health impacts, there is a lack of specific studies focusing on the unique challenges faced by children who are married in humanitarian contexts. Humanitarian settings, such as refugee camps or areas affected by conflict or natural disasters, present challenges, and vulnerabilities for children, including those who are married at a young age. These vulnerabilities can exacerbate the health consequences of child marriage. Child brides in humanitarian settings usually face higher risks of early and unintended pregnancies, unsafe abortions, sexually transmitted infections (STIs), and complications during childbirth due to limited access to healthcare services and information. Girls who have gone through child marriage in humanitarian contexts can contribute to increased levels of stress, anxiety, depression, and trauma, especially considering the additional hardships and disruptions they face due to conflict or displacement. Girls may also be at a higher risk of experiencing various formed of gender-based violence, including domestic violence, intimate partner violence, sexual abuse, and exploitation, which can also have profound physical and psychological health consequences. Finally, humanitarian crises can disrupt the access to several services, such as education, mental health support and sexual and reproductive health services, causing poor health.

The overarching goal of the systematic review is to synthesise existing research and evidence pertaining to the health implications of child marriages within humanitarian contexts.

Addressing these gaps in the literature is crucial for our better understanding of the intersection between child marriage and humanitarian settings, and how it affects the health of these children. It would also help for informing evidence - based intervention and policies to protect the health and well-being of affected children. This will allow to bridge the gap in knowledge and offer invaluable insights for policymakers, practitioners, and organisations involved in evidence-based interventions and programming. By comprehensively examining the health consequences of child marriages in humanitarian settings, the review aims to contribute crucial information towards mitigating the immediate and long-term health challenges faced by young girls affected by these intersecting vulnerabilities.

Chapter 2 Methods

This review was implemented by following the Preferred Reporting Items for Systematic Reviews and Meta – Analysis (PRISMA) 2020 guidelines (Page et al., 2021). The study was registered with PROSPERO (CRD42024529134).

2.1 Search strategy

This systematic review includes publications involving those who have experienced child marriages in humanitarian settings, aged 18 years and under. All odds ratios pertaining to health conditions, such as mental health, physical health and intimate partner violence were included. All methods for measurement of mental health, and physical health were included, for example self-completed survey or clinical examinations. Studies were excluded if it was not possible to obtain the full text, or if it was not possible to segregate the populations of those who experienced child marriage from those did not.

Humanitarian settings were defined as places that are suffering from armed conflicts, natural disasters, and disease outbreaks and where individuals are in urgent need of assistance and protection, as specified in the United Nations (United Nations, 2020a). There were no language restrictions; our searches did not yield any results that needed translating. The search was conducted in relevant health databases from January 1946 to February 2024, including Medline, PsycINFO, CINAHL and Web of Science. We also searched grey literature from Girls Not Brides, International Centre for Research on Women, UN Children's Fund and UNICEF and WHO, as well as hand searching the bibliography of relevant journals and citation tracking.

The search strategy was developed with assistance from a Research Fellow in Systematic Reviews at Keele University. The chosen research terms were based under two main headings: 1) Child Marriage and 2) Humanitarian Settings and their variations, as well as including Medical Subject Headings (MeSH). Related words such as plurals and alternative forms of the terms (e.g. Early Marriage and Adolescent Marriage) were also included. These terms were combined with the "OR' and "AND" Boolean search operators according to each database's requirements and specifications. The full search strategy is available from the Appendix: Figure 6 – 1 to 6 - 4.

Inclusion criteria

- **Study design**: quantitative papers, which are cross-sectional, cohort or longitudinal studies in nature and qualitative papers, such as in-depth interviews, focus groups, and ethnography.
- **Study population**: individuals who were exposed to or were married under the age of 18.
- **Study setting**: studies about child marriage that take place in humanitarian settings.
- **Outcome of study**: any study describing and/or measuring health outcomes from child marriages in a humanitarian settings.

Exclusion criteria

- **Study design**: publications such as opinion pieces and editorials, dissertations/ theses, policy papers, general reports that do not introduce new evidence from a specific study, conference abstracts and review articles.
- **Study population**: where the marriage takes place after the age of 18.
- **Study setting**: studies about child marriages that did not take place in humanitarian settings.
- **Outcome of study:** studies that do not describe or measure any health outcomes relating to child marriages in humanitarian settings.

Figure 2: Study eligibility criteria.

Adapted from (Burgess et al., 2022)

2.2 Eligibility criteria

Quantitative and Qualitative research articles that investigated any health outcomes from those who experienced child marriages (defined as any girl or boy who is in a formal/informal union, under the age of 18) in humanitarian settings, published from January 1946 until February 2024, written in any language, were included (Figure 2).

2.3 Exclusion criteria

Publications such as editorials, opinion articles, policy papers, book chapters, newsletters and reviews which do not introduce new evidence from a specific study were excluded, as it is not primary research (Higgins et al., 2023). Figure 2 shows the study's inclusion and exclusion criteria.

2.4 Screening of articles

The titles and abstracts were initially screened for using the Rayyan Systematic Review Tool (Ouzzani et al., 2016). Two independent reviewers (SS and TS) performed the initial title and abstract screening and selection, blinded to each other's initial inclusion/exclusion decisions. Once both reviewers had completed the screening, they were unblinded. Conflicts were resolved through a discussion between the reviewers until a consensus was reached on the basis of the inclusion and exclusion criteria (Figure 2). For the articles that progressed through the Title and Abstract screening, the full texts were obtained to conduct the full text review (all full text versions of these articles were obtained). Blinded full text screening was completed by the same two reviewers (SS and TS), using Rayyan. Any conflicts relating to an articles inclusion or exclusion were again resolved through discussion until a consensus was reached.

Figure 3 shows the process of the review, according to the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) 2020 guidelines (Page et al., 2021).

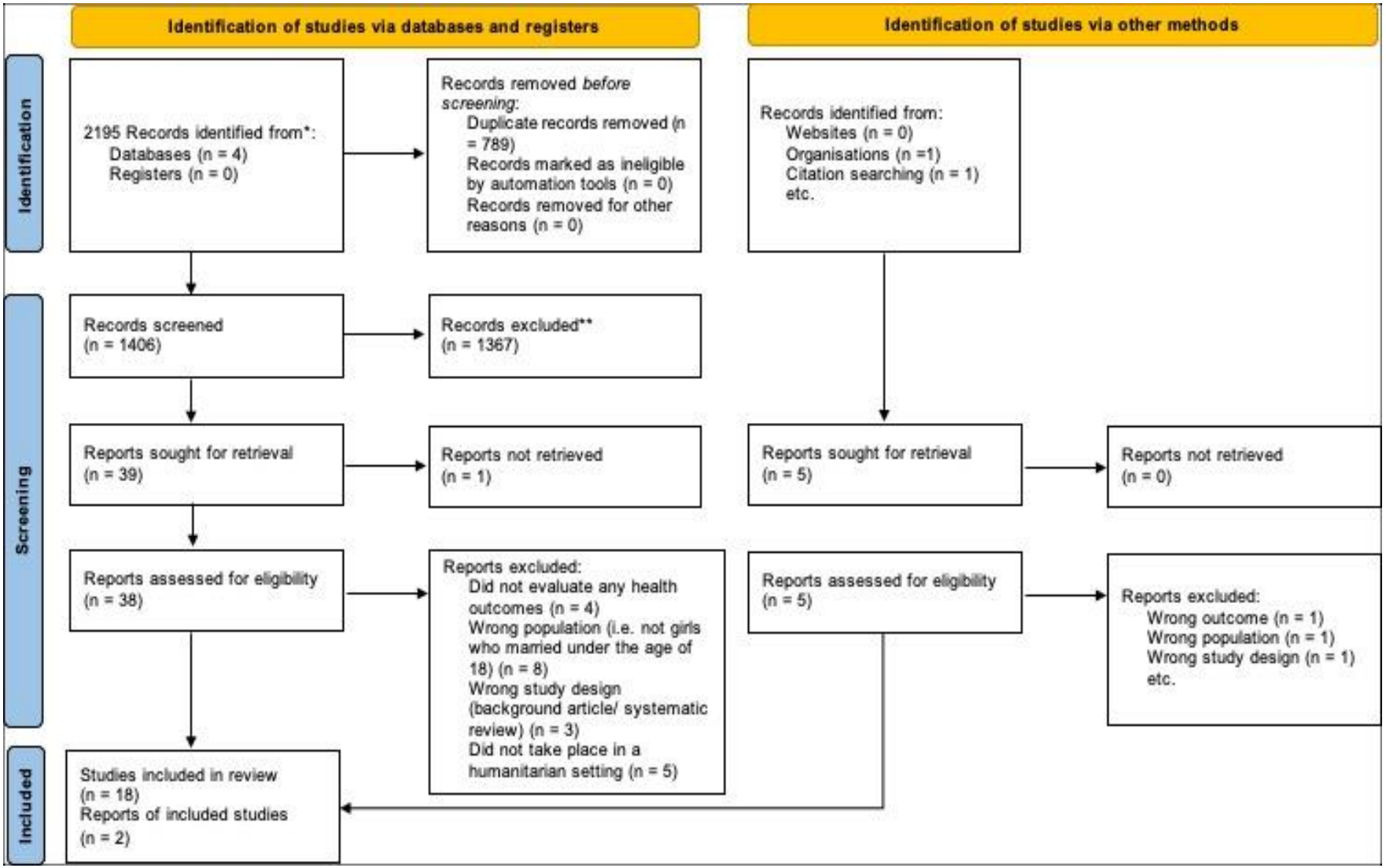

Figure 3: PRISMA (2020) flow diagram

2.5 Data extraction

Quantitative and qualitative data was extracted onto a piloted electronic database form, using Microsoft Excel (Microsoft Corporation, 2024). The following data were extracted from all the included articles: date of extraction, data extractor, study ID, author and title, publication year, country, study design, type of humanitarian setting, health outcomes, methodological quality, population, effect estimates (odds ratios of health outcomes of child marriages, 95% CI and *p* value), sample size, limitations, relevant quotes for qualitative analysis, and author conclusion of the study.

2.6 Critical appraisal

For the critical appraisal of the studies included in this systematic review, the "Mixed Methods Appraisal Tool (MMAT) version 2018" was used (Hong et al., 2018). This tool allows for the appraisal of the methodological quality of five categories of studies: Qualitative, Quantitative (randomised controlled trials, Quantitative non-randomised, Quantitative (descriptive) and Mixed methods. This version of MMAT includes two screening questions and five further questions depending on the methodological design of the study (Hong et al., 2018). For each of the five questions, in each category, it must be rated in three options: "yes" (the criterion is met), "no" (the criterion is not met), "can't tell" (there is not enough information given in the paper to decide if the criterion is met or not). An example of a question for the qualitative section is: "Is the qualitative approach appropriate to answer the research question?". Quality assessment was carried out independently by one reviewer (SS) and was verified by a second reviewer (TS). Any discrepancies were settled with discussion.

2.7 Data synthesis

1.1.1 Qualitative analysis methodology

For the qualitative component of this mixed – methods systematic review, a thematic analysis approach was utilised (Thomas and Harden, 2008). This allows data from primary studies, that discuss the health outcomes of child marriages in humanitarian settings, to be analysed. This method has three stages, in which it requires the researcher to be familiar and well – versed with the data. In the first stage, the researcher carries out open line – by – line coding of the data from the primary studies, which are then organised into groups. These groups of codes are then developed into descriptive themes and are used to generate analytical themes (Thomas and Harden, 2008).

The qualitative synthesis was built upon second – order constructs, which are overarching themes identified by the authors of the primary studies. The analytical themes which were generated from this process are categorised as third – order constructs. First – order constructs, involving direct quotes from participants as reported in the papers, were reviewed, and documented alongside the third – order constructs. This approach was chosen instead of conducting a primary analysis, due to the high quality and coherence levels observed during the quality assessments.

Initially, an open coding approach was employed to determine the perspectives and experiences of girls who experienced child marriages, their relatives and healthcare professionals, respectively, regarding the health outcomes of child marriages in humanitarian settings. As recurring themes emerged from the coding process, the perspectives of these groups became clearer. Analytical themes were then derived to explain the issues faced by the population pertaining to the health outcomes of child marriages in such settings.

2.7.1 Quantitative analysis methodology

We compiled quantitative estimates and presented these as odds ratios in a forest plot to provide a visual summary of the health outcomes of child marriages in humanitarian settings, their effect sizes, and directions of associations with child marriage. We decided against a meta-analysis for the IPV odds ratios, due to the heterogeneity in methodology and the differences reported in the outcomes. The IPV outcomes reported in the studies were lifetime IPV, experienced IPV, physical IPV, sexual IPV and emotional IPV.

2.7.2 Reasons for choosing a mixed methods approach

The mixed methods approach was chosen to comprehensively assess the health outcomes associated with child marriages in humanitarian settings, since it aligned with the study's objectives. Quantitative data are essential for understanding the prevalence, types and severity of health issues among girls who experience child marriage (Regnault et al., 2018). This allows for the identification of specific outcomes such as nutrition and mental health conditions. Statistical analysis provides insights into overall trends and the scale of health impact, which is critical for informing policy and humanitarian interventions. Qualitative methods, in contrast, capture nuanced personal experiences, shedding light on psychological and social challenges that numbers alone cannot convey, including cultural, economic, and social pressures, limited healthcare access, trauma from conflict, and forced displacement (Regnault et al., 2018). This mixed methods integration allows for triangulation, where quantitative data provide measurable outcomes and qualitative data offer depth and context, enabling a more complete answer to the research questions by not only identifying the health impacts but also exploring why and how they manifest in humanitarian settings (Regnault et al., 2018). Additionally, the mixed approach enhances the study's policy relevance, as quantitative

findings offer data-driven evidence for resource allocation while qualitative insights ensure that policies are culturally sensitive and responsive to the lived realities of affected girls.

We also focused on extracting qualitative data exclusively from studies that employed qualitative methods, as well as from the qualitative components of mixed methods studies. Together, all of this qualitative data was used in the thematic analysis component. Similarly, we used quantitative data from studies that employed solely quantitative methods, as well as from the quantitative components of mixed-methods studies, to assist with calculating the odds ratios. This kept the analysis for the quantitative and qualitative components of systematic review separate.

2.8 Deviations from PROSPERO protocol

There were two deviations from the original PROSPERO (CRD42024529134) protocol for the systematic review that was published beforehand. The first change was from using the Critical Appraisal Skills Programme to the Mixed Methods Appraisal Tool. The Mixed Methods Appraisal Tool (MMAT) was considered better than CASP (Critical Appraisal Skills Programme) for quality appraisal in our systematic review, as we included primary articles with diverse methodologies, such as mixed-methods studies. MMAT is specifically designed to appraise both qualitative, quantitative, and mixed-methods studies within a single framework, allowing for a consistent and systematic evaluation across study types. This makes it especially useful in reviews that incorporate various research designs, as MMAT provides criteria tailored to each methodological approach. In contrast, CASP primarily focused on appraising qualitative or specific types of quantitative studies (e.g., RCTs) and lacks specific criteria for mixed-methods research, which made it less suitable for our systematic review, which involved multiple study methods.

The second deviation from the protocol involved following Thomas and Harden's thematic analysis instead of the original decision to use Popay's guidance. Thomas and Harden's approach to thematic analysis may be better suited than Popay's method, particularly when analysing qualitative data in systematic reviews, due to its structured and systematic process for identifying themes in complex data. Thomas and Harden emphasize a three-stage process: line-by-line coding, developing descriptive themes, and generating analytical themes. This step-by-step approach facilitates a thorough breakdown of data and is particularly valuable in studies where themes are not predefined, allowing themes to emerge inductively from the data itself. This is especially useful for research questions exploring nuanced or less-examined topics, such as health outcomes of child marriages in humanitarian settings, where themes might be unpredictable and context dependent.

Popay's approach, on the other hand, is often more interpretative and suited to narrative synthesis rather than a purely thematic one. It emphasizes bringing together findings across diverse studies without as structured a method for systematically generating themes from the raw data. As a result, Popay's method may be less effective when the research aim is to create detailed themes directly from participants' experiences or text.

Chapter 3 Results

3.1 Search results

The search of 4 databases, Medline, CINAHL, PsycInfo and Web of Science, resulted in 2195 records being identified, from which 789 duplicates were removed using the Rayyan software (Ouzzani et al., 2016). This resulted in 1406 article abstracts being screened against the inclusion and exclusion criteria. 1367 articles were excluded on this basis. 39 articles were sought for retrieval. However, the full – text could not be retrieved for one article and was therefore excluded. Records were excluded at the full stage review if the article did not evaluate any health outcomes (n = 4), the population were not those who got married below the age of 18 (n = 8), the study design being a background article or a systematic review (n = 3), or the study did not take place in a humanitarian setting (n= 5). 2 extra studies were included through searching grey literature and citation tracking.

3.2 Overview of study characteristics

3.2.1 Study design

Of the 20 articles that were included after full-text review, 10 were quantitative studies (Elnakib et al., 2022b, 2021a; Fonseka et al., 2022a, 2022b; İnel Manav, 2024; M. Mofizul Islam et al., 2021; Kanselaar et al., 2023; Kutuk et al., 2024; Malak et al., 2021; Nishat et al., 2023); 3 were qualitative (Collier et al., 2023; Elnakib et al., 2021b; Whiting-Collins et al., 2022) and 7 were mixed – methods studies (Baird et al., 2022; Guglielmi et al., 2021; Hamad et al., 2021; Hunersen et al., 2022; M Mofizul Islam et al., 2021; Loutet et al., 2022; Presler - Marshall et al., 2023). All studies which were quantitative used cross – sectional methods, and the qualitative studies used 316 in-depth one-to-one semi-structured interviews and 45 focus group discussions. This is depicted in Table 1.

All the articles included in this study were published between 2020 and 2024. More than half of the studies were published between 2021 and 2022, which were 14 out of the 20 studies included (Baird et al., 2022; Elnakib et al., 2022b, 2021a, 2021c; Fonseka et al., 2022a, 2022b; Guglielmi et al., 2021; Hamad et al., 2021; Hunersen et al., 2022; M Mofizul Islam et al., 2021; M. Mofizul Islam et al., 2021; Loutet et al., 2022; Malak et al., 2021; Whiting-Collins et al., 2022). Four were published in 2023 (Collier et al., 2023; Kanselaar et al., 2023; Nishat et al., 2023; Presler - Marshall et al., 2023); and two in 2024 (İnel Manav, 2024; Kutuk et al., 2024).

3.2.2 Type of setting

Most studies were performed in the Middle East; three in Lebanon (Collier et al., 2023; Elnakib et al., 2022b; Whiting-Collins et al., 2022), one in Jordan (Malak et al., 2021) , two in Turkey (İnel Manav, 2024; Kutuk et al., 2024), and one in Egypt (Elnakib et al., 2021c)and Yemen (Hunersen et al., 2022). The remainder were: one from Uganda (Loutet et al., 2022), four from Bangladesh (Guglielmi et al., 2021; M Mofizul Islam et al., 2021; M. Mofizul Islam et al., 2021; Nishat et al., 2023), two from Sri Lanka (Fonseka et al., 2022a, 2022b), and one from Ethiopia (Elnakib et al., 2021a). Three studies were performed in more than one country (Pakistan, Mali, Uganda, and Haiti (Kanselaar et al., 2023); Bangladesh and Jordan (Baird et al., 2022); Bangladesh, Jordan, and Lebanon (Presler - Marshall et al., 2023)) (Table 1).

Out of all the 20 included studies, 15 were either carried out in a refugee camp or settlement or focused on women refugees (Baird et al., 2022; Collier et al., 2023; Elnakib et al., 2022b, 2021a, 2021c; Guglielmi et al., 2021; Hamad et al., 2021; İnel Manav, 2024; M Mofizul Islam et al., 2021; M. Mofizul Islam et al., 2021; Kutuk et al., 2024; Loutet et al., 2022; Malak et al., 2021; Presler - Marshall et al., 2023; Whiting-Collins et al., 2022). The other 5 studies were carried out in fragile or extremely fragile states (Kanselaar et al., 2023); in conflict-affected

settings (Fonseka et al., 2022b, 2022a); during the COVID-19 pandemic (Nishat et al., 2023)or focused on internally displaced persons (IDP) (Hunersen et al., 2022)(Table 1).

3.2.3 Study participants

A total of 21,375 adolescent participants were involved in the studies (Table 1). The youngest participant included in a few of the studies were 10 years old at the time of interview (Elnakib et al., 2021c) and the oldest participant was 19 years at the time of interview (M. Mofizul Islam et al., 2021) . These participants had child marriages at the time of the study, when they were interviewed, and those who were older than 18, had child marriages below the age of 18. Some studies only included participants that were older than 18 years at the time of the interview, however had marriages less than the age of 18 years old (Fonseka et al., 2022b, 2022a).

Fifteen studies focused exclusively on female participants (Baird et al., 2022; Elnakib et al., 2022b, 2021a; Fonseka et al., 2022a, 2022b; Hamad et al., 2021; İnel Manav, 2024; M Mofizul Islam et al., 2021; M. Mofizul Islam et al., 2021; Kanselaar et al., 2023; Kutuk et al., 2024; Malak et al., 2021; Nishat et al., 2023; Presler - Marshall et al., 2023; Whiting-Collins et al., 2022), while five studies included both female and male participants (Collier et al., 2023; Elnakib et al., 2021c; Guglielmi et al., 2021; Hunersen et al., 2022; Loutet et al., 2022). Additionally, 308 key informants (KIs) participated in the studies. KIs comprising elders, parents, healthcare providers, counsellors, NGO staff and religious leaders, were interviewed regarding their views of child marriage and its consequences, however their data did not contribute to any subsequent analysis, as it was beyond the scope of this review.

3.2.4 Ethics of studies

In assessing the studies included in this systematic review, various ethical considerations arise regarding obtaining consent for child and adolescent participants. Most studies explicitly

reported obtaining informed consent for participants, and in cases involving minors, assent from them was typically coupled with parental or guardian consent. Furthermore, ethical approval was gained from reputable Institutional Review Boards (IRBs) or ethics committees in many cases. Therefore, standard research ethics was complied with for most studies.

However, in studies that took place in Yemen and Egypt, married minors were considered emancipated and consented as adults (Elnakib et al., 2021b, 2021c; Hunersen et al., 2022). While this aligns with local legal definitions, it raises ethical concerns about their autonomy and capacity to fully understand the implications of research participation. For unmarried minors, dual processes of assent and parental permission were employed, reflecting adherence to ethical norms for research with children. Some studies utilized oral consent or assent procedures to accommodate settings with limited literacy, though this necessitates stringent protocols to ensure genuine understanding and voluntary participation. Additionally, most studies emphasised measures to safeguard participant privacy and confidentiality, critical in research addressing sensitive topics such as child marriage.

3.2.5 Health outcomes

The health outcomes from the primary articles have been categorised into 4 groups: 1) Intimate Partner Violence, where physical, sexual and emotional abuse were considered within a single group, 2) Sexual and reproductive health, which focused on the use of contraception, spacing of births and infant and maternal mortality rates, 3) Psychological well-being (including depression, anxiety, PTSD and suicidal ideation) and 4) Nutrition and well-being, which included child stunting and adequate nutrition.

Of the 20 studies, 8 studies focused on IPV (Collier et al., 2023; Fonseka et al., 2022b; Guglielmi et al., 2021; Hamad et al., 2021; Hunersen et al., 2022; M. Mofizul Islam et al.,

2021; Kanselaar et al., 2023; Whiting-Collins et al., 2022); 6 studies looked at psychological well-being of child brides (Baird et al., 2022; İnel Manav, 2024; Kutuk et al., 2024; Malak et al., 2021; Nishat et al., 2023; Presler - Marshall et al., 2023); 5 looked at sexual and reproductive health (Elnakib et al., 2022b, 2021a, 2021c; M Mofizul Islam et al., 2021; Loutet et al., 2022) and 1 study focused on nutrition and well-being (Fonseka et al., 2022a).

Table 8: Study characteristics

Number	Title	Author	Publication Year	Study Setting	Sample Size	Study Population	Age of Participants	Sex of Participants	Study Design	Main Objectives of the Study	Conclusion /recommendations by Study Authors	Limitation of Study
1	Exploring Disability as a Determinant of Girl Child Marriage in Fragile States: A Multicountry Analysis.	Kanselaar, Samantha, Zhang, Cheyu, Grace, Karen Trister, Lindley, Lisa L, Zaidi, Jaffer, Gupta, Jhumka.	2023	Fragile/ Extremely Fragile States as described by the OECD (Pakistan, Mali, Uganda, Haiti)	3119 married women aged 20 - 24 years, as defined by the United Nations Children's Fund marriage indicators. Of which, 45.2% were married as children (under the age of 18).	Married women who live in fragile/extremely fragile states (Pakistan, Mali, Uganda and Haiti)	20 to 24	Female	Quantitative Cross-sectional	To assess the prevalence and associations of disability with girls child marriage and IPV in fragile states	Their findings suggest that girls who have a disability have a higher chance of getting married as a child. They also found that the girls who married as children and have a disability are more likely to experience IPV, in fragile settings. There is a need for programming and response needs to take into account disabled girls, so that the full scope of violence against disabled women and girls in fragile settings is understood.	Causality can not be ascertained due to the cross-sectional design. There may be an underreporting bias, due to the nature of the topic of IPV, GCM and disability
2	Sexual and reproductive health factors associated with child, early and forced marriage and partnerships among refugee youth in a humanitarian setting in Uganda: Mixed methods findings.	Loutet, Mir, a G, Logie, Carmen H, Okumu, Moses, Berry, Isha, Lukone, Simon O, Kisubi, Nelson, McAlpine, Alyssa, Mwima, Simon, Kyambadde, Peter.	2022	Bidi Bidi Refugee Settlement (Northwest Uganda)	76 (for qualitative phase) and 120 (for quantitative phase)	Young sexual violence survivors (aged 16 - 24), elders and healthcare providers from the refugee settlement for the qualitative phase and 120 refugee youth (aged 16 - 24) for the quantitative phase	16 to 58	Female and Male	Quantitative and Qualitative In-depth interviews and focus groups and cross - sectional	To examine the child, early and forced marriage in an Ugandan refugee camp and its assocation with sexual and reproductive health outcomes in young women.	There is a high prevalence of child marriages occuring among the Bidi Bidi refugee youth. These women who experienced child marriage also reported forced pregnancies, forced abortions, and missed school due to sexual violence. They also found women have reduced reproductive rights, such as not being permitted to use family planning. More data and evidence is needed to implement programs that can eradicate child marriages.	The cross-sectional study design means that causality cannot be ascertained. There may be a recall bias, as the youth were asked to brief their experiences from more than 12 months ago. The nature of the topic may mean there is under-reporting of experieces, due to the desirability bias.
3	Factors affecting child marriage and contraceptive use among Rohingya girls in refugee camps	Islam, M Mofizul, Khan, Md Nuruzzaman, Rahman, Md Mashiur.	2021	Refugee camp, Cox's Bazaar in Bangladesh	114 adolescent girls aged 10 - 19 years	Rohingya refugee girls living in camps in Bangladesh and service providers of reproductive healthcare services.	10 to 19	Female	Quantitative and Qualitative One-to-one interviews and cross - sectional	To assess the factors which influence contraceptive use among young women who have undergone child marriage in a humanitarian setting	There is a pressure to become pregnant soon after their child marriages, even though they have a limited knowledge of sexual and reproductive health. As a result, there seems to be an avoidance of contraceptive use among married women, before giving birth to their first child. Counselling and contraception services offered by outreach health and family planning workers should be expanded. Also, it is critical that more research needs to take place into identifying effective programmes to prevent and reduce its negative consequences among girls who have experienced child marriage in humanitarian settings	Desirability bias may mean the girls did not disclose their true ages at marriage. Secondly, the cross-sectional design of the study means causality cannot be determined. Multiple languages were used between the interviwers and interviewees, therefore meanings may have been lost in the questions and responses.
4	Measuring the impacts of maternal child marriage and maternal intimate partner violence and the moderating effects of proximity to conflict on stunting among children under 5 in post-conflict Sri Lanka.	Fonseka, Ruvani W, McDougal, Lotus, Raj, Anita, Reed, Elizabeth, Lundgren, Rebecka, Urada, Lianne, Silverman, Jay G.	2022	Sri Lanka (a conflict - affected setting)	4941 child - mother dyads	Women who have undergone child marriage in conflict - affected Sri Lanka.	18 to 49	Female	Quantitative Cross-sectional	To understand whether girl child marriage and intimate partner violence affects stunting among Sri Lankan children under 5	Maternal child marriage was not associated with stunting of children in Sri Lanka. One of the reasons given by the study authors was that there was a higher level of humanitarian aid programs. Another reason could also be increased child mortality in areas central to the conflict. Also in this sample, even though many mothers were married before the age of 18, they may have given birth to child many years into adulthood; other studies found that the association between maternal child marriage and child malnutrition was facilitated by early childbearing.	A cross-sectional study design therefore we cannot be certain that there is a causality. Additionally, the survey did not collect any information regarding paternal height, which can also affect stunting, and only data on past year experience of IPV, not lifetime experience.

Table 8: Study characteristics (continued)

Number	Title	Author	Publication Year	Study Setting	Sample Size	Study Population	Age of Participants	Sex of Participants	Study Design	Main Objectives of the Study	Conclusion /recommendations by Study Authors	Limitation of Study
5	A mediation analysis of the role of girl child marriage in the relationship between proximity to conflict and past-year intimate partner violence in post-conflict Sri Lanka.	Fonseka, Ruvani W, McDougal, Lotus, Raj, Anita, Reed, Elizabeth, Lundgren, Rebecka, Urada, Lianne, Silverman, Jay G.	2022	Sri Lanka (a conflict - affected setting)	1984	Women who have undergone child marriage in conflict - affected Sri Lanka.	18 to 49	Female	Quantitative Cross-sectional	To understand the effect of girl child marriage on intimate partner violence and whether proximity to conflict affects this	It was found that centrality to conflict in Sri Lanka increased the odds of child marriage and there was an increase in the odds of intimate partner violence. Women who had married as a child also has increased odds of sexual, physical and emotional IPV, compared to those who married as an adult. The study authors recommend that child marriage intervention programs should take place in areas central to the conflict to suppport the women and girls who live there, rather than in areas bordering the conflict	The cross-sectional study design means that causality cannot be inferred from the findings. Women may have underreported child marriage or IPV, due to the desirability bias.
6	Intersecting Disadvantages for Married Adolescents: Life After Marriage Pre- and Post-COVID-19 in Contexts of Displacement.	Baird, Sarah, Murphy, Maureen, Seager, Jennifer, Jones, Nicola, Malhotra, Anju, Alheiwidi, Sarah, Emirie, Guday, Rashid, Sabina, Sultan, Maheen.	2022	Refugee camps in Cox's Bazar, Bangaldesh and Jordan	293 (for quantitative study) and 46 (for qualitative study)	Refugee girls (aged 15 - 17) in Bangladesh and Jordan, of Rohingya, Bangladesh, Jordanian and Syrian nationalities.	15 to 17	Female	Quantitative and Qualitative one-to-one interviews and cross - sectional	Determine the well-being of those who married as a child in refugee settings compared to those who did not , especially in the context of the COVID-19 pandemic	Married girls in contexts affected by displacement are disadvantaged in many ways, and the intersecting vulnerability of the Covid-19 pandemic has made it worse for these girls. More programming is needed that considers the unique constraints married and unmarried girls face in humanitarian settings.	A cross-sectional study design therefore we cannot be certain that there is a causality. Sample size for married girls was small, therefore it was hard to conduct multi-variate regression analysis.
7	Investigating Incidence, Correlates, and Consequences of Child Marriage Among Syrian Refugees Residing in the South of Lebanon: A Cross-Sectional Study.	Elnakib, Shatha, El Khoury, Ghada, Salameh, Pascale, Sacre, Hala, Abirafeh, Lina, Robinson, W Courtl, Metzler, Janna.	2022	Syrian Refugees in South Lebanon	2486 syrian women (1593 are adolescent girls and 893 women are above the age of 19)	Syrian refugee women (aged 15 and above) who are residing now in South Lebanon due to the Syrain Conflict of 2011	15 to 49	Female	Quantitative Cross-sectional	To investigate the rates and consequences of child marriage among Syrian refugees.	There are high rates of child marriage and family formation among Syrian refugees in Lebanon. The refugee girls have low knowledge of the dangers of early childbearing and closely spaced births. There is a high rate of child birth witnessed in this sample. Programs need to focus on preventing the impacts of child marriage, such as early childbearing.	This is another cross-sectional study design therefore we cannot be certain that there is a causality. Again there might be a desirability bias due to the nature of the topic and so there may be underreporting.
8	Evaluation of psychological reactions among teenage married girls in Palestinian refugee camps in Jordan.	Malak, Malakeh Z., Al-amer, Rasmieh M., Khalifeh, Anas H., Jacoub, Shirooq M.	2020	Palestinian refugee camp in Jordan	205 adolescent girls	Teenage Palestinian refugee women who were married as children, who are now residing in Jordan	13 to 18	Female	Quantitative Cross-sectional	Evaluation of depression, anxiety and stress symptoms among teenage married girls in a Palestinian camp in Jordan	There is a high prevalence of psychological symptoms, including depression and anxiety, in this cohort and it can be attributed to child marriage. More than one-third of the girls has moderate to severe levels of depression. Previous trauma, education levels and age at marriage were determinants for the levels of psychological reactions. The study authors recommend that this study should be used to develop interventional programs to help with the improvement of the mental health of early married girls.	This is another cross-sectional study design therefore we cannot be certain that there is a causality. There might be a desirability bias due to the nature of the topic and so there may be underreporting, to look favourable to others.
9	Child marriage among Somali refugees in Ethiopia: a cross sectional survey of adolescent girls and adult women.	Elnakib, Shatha, Hunersen, Kara, Metzler, Janna, Bekele, Hailu, Robinson, W. Courtl.	2021	Kobe refugee camp in Ethiopia	522 adolescent girls	Somali teenage girls who have undergone child marriage and reside in Kobe camp, Ethiopia	15 to 19	Female	Quantitative Cross-sectional	Quantification of child marriages in Somalian adolescent girls in an Ethiopian camp and identification of the consequences	There is a gap in the girls' knowledge about contraceptives. Married adolescent girls do not use contraceptives frequently and are unable to exercise their reproductive rights. Programs should not only work on the prevention of child marriages, but also its negative consequences.	This is another cross-sectional study design therefore we cannot be certain that there is a causality. There might be a desirability bias due to the nature of the topic and so there may be underreporting, to look favourable to others, but also that child marriage is illegal.

Table 8: Study characteristics (continued)

Number	Title	Author	Publication Year	Study Setting	Sample Size	Study Population	Age of Participants	Sex of Participants	Study Design	Main Objectives of the Study	Conclusion /recommendations by Study Authors	Limitation of Study
10	Drivers and consequences of child marriage in a context of protracted displacement: a qualitative study among Syrian refugees in Egypt.	Elnakib, Shatha, Hussein, Salma Abou, Hafez, Sali, Elsallab, May, Hunersen, Kara, Metzler, Janna, Robinson, W. Courtl.	2021	Syrian female refugees in Egypt	15 focus group discussions, 29 married and unmarried girls, as well as mothers of the adolescent girls for in - depth interviews and 28 semi-structured interviews with health providers	Syrian refugee women who are now residing in three governorates (Giza, Damietta, Qalyubia) in Egypt	10 to 19	Female and Male	Qualitative Focus group discussion and in-depth interviews	To understand how child marriage among Syrian refugees affects the girls' wellbeing	Early childbearing and rarely using contraceptives until after the first birth were prevalent in this sample. There needs to be better access to quality services, such as education, health, GBV and social protection, for adolescent girls, young women and their children for norms to be transformed and eventually marriage practices.	The sample size may not be representative, as they didn't not cover all the refugee camps. Social desirability bias may also play a part, due to the sensiitive nature of the topic
11	An exploratory, single-center study of factors associated with child marriage among Syrian female adolescents residing in Turkey.	Kutuk, Meryem Ozlem, Kilicaslan, Fethiye, Tufan, Ali Evren, Celik, Fatma, Gokcen, Cem, Gozukara Bag, Harika, Servi, Gulay, Karali, Mehtap, Bahsi, Gamze, Servi, Ceyhun, Alatli, Resat, K, emir, Betul, Aytekin, Neslihan, Kutuk, Ozgur.	2022	Syrian female refugees in Turkey	610 teenage female residents of the Malatya Beydağı Container Refugee Camp	Syrian Refugee women who have undergone child marriage and are residing in the camps in Turkey	13 to 18	Female	Quantitative Cross-sectional	Determine the psychological status of child brides and their children and are residing in a refugee camp in Turkey	Child marriage among Syrian female adolescents is related to lifetime traumatic experiences and PTSD diagnosis. There may be a transgenerational transmission of psychopathology and urgent interventions are needed to to help them. They find that education is also needed to end and prevent early marriage, as well as interventions to stop young girl from dopping out of school. When the mothers of the girls are not educated, this increases the risk of the woman marrying early and so promoting education can have better effects spanning several generations.	There is a limited sample size which means it may not be representative. Since the study asks the participants to report on traumatic experiences as well as intimate partner violence, there may be underreporting due to recall bias
12	'Now, She's a Child and She Has a Child'—Experiences of Syrian Child Brides in Lebanon after Early Marriage.	Collier, Am, a, House, Emily, Helal, Shaimaa, Michael, Saja, Davison, Colleen M., Bartels, Susan A.	2023	Syrian Refugees in Lebanon	83 Syrian adolescent girls, who were married, divorced or separated and 30 from parents.	Syrian refugee women who are residing now in Lebanon due to the Syrain Conflict of 2011, and have had experience with child marriage	13 to 24	Female and Male	Qualitative Cross - sectional study using Sense-Maker	Examination of the experiences of those who have undergone child marriage as a Syrian refugee in Lebanon	The study authors recommend that programs should help Syrian early married women by giving them support on managing a household, caring for children, and importantly dealing with IPV/DV. Programs that help women to access or continue education even after marriage is crucial.	The sample was not representative, and thus the results are not generalizable. Girls younger than 13 were not enrolled, and extremely marginalized families may have been underrepresented.
13	Attitudes to and experiences of intimate partner violence among Rohingya women who married before eighteen years of age.	Islam, M. Mofizul, Khan, Md Nuruzzaman, Rahman, Md Mashiur.	2021	Refugee camp, Cox's Bazaar in Bangladesh	486 Rohingya adolescent girl refugees in Bangladesh who were recently married	Rohingya refugee girls living in the Kutupalong camp in Bangladesh	No mention, however the average age of women participants in the study is 23.17 years old	Female	Quantitative Cross-sectional	Examination of the attitude and experiences of intimate partner violence in Rohingya refugee women who experienced child marriage	Rohingya women who married below the age of 18 are more likely to experience IPV. They are also more likely to believe that their husbands are justified in beating them. They hypothesise that addressing these issues, will in turn reduce unintended pregnancies. Intervention stopping , compulsory birth and marriage registration, all-women support group, and legal support are needed.	The cross-sectional study design means that causality cannot be inferred from the findings. Women may have underreported child marriage or IPV, due to the desirability bias.
14	'No One Should Be Terrified Like I Was!' Exploring Drivers and Impacts of Child Marriage in Protracted Crises Among Palestinian and Syrian Refugees.	Hamad, Bassam Abu, Elamassie, Samah, Oakley, Erin, Alheiwidi, Sarah, Baird, Sarah	2021	Syrian female refugees in Gaza and Jordan	4544 Syrian Refugee adolescent girls	Syrian Refugee adolescents in Gaza and Jordan	No exact age range given.	Female	Quantitative and Qualitative In-depth interviews and focus groups and cross - sectional	Exploration of the drivers and consequences of child marriage among Palestinian and Syrian Refugees.	Married girls are vulnerable and at risk of poor health. They need intervention targeting their health, especially their nutrition. There should be greater support for child brides exposed to violence, providing access to psychosocial services, counselling and legal aid. More research is needed to understand the drivers of child marriage in humanitarian settings and its consequences	Social desirability may cause the girls to underreport their experiences of child marriage and its consequences

Table 8: Study characteristics (continued)

Number	Title	Author	Publication Year	Study Setting	Sample Size	Study Population	Age of Participants	Sex of Participants	Study Design	Main Objectives of the Study	Conclusion /recommendations by Study Authors	Limitation of Study
15	'I Just Keep Quiet': Addressing the Challenges of Married Rohingya Girls and Creating Opportunities for Change.	Guglielmi, Silvia, Mitu, Khadija, Seager, Jennifer.	2021	Refugee camp, Cox's Bazaar in Bangladesh	488 male and female adolescent Rohingya refugees	Rohingya refugee girls living in Ukhia Upazila and Teknaf Upazila camps in Bangladesh	11 to 18	Female and Male	Quantitative and Qualitative In-depth interviews and focus groups and cross - sectional	Understand the perspectives of Rohingya girls on child marriages and and the consequences of it.	Rohingya married girls are at risk of IPV, GBV and social isolation. To meet SDG 5.3. more research is needed to understand the drivers and consequences of child marriage, particularly in humanitarian settings.	Specific nuances of meaning may have been lost during translation due to the different languages of the interviwers compared to the interviewees.
16	An evaluation of early marriage and the mental state of Roma women: A cross-sectional study.	İnel Manav, Ayşe.	2023	Roma women in Adana , Turkey	272 married Roma women who had married before the age of 18.	Roma women who have been living in Turkey	18 to 67	Female	Quantitative Cross-sectional	To determiene the mental health of Roma women who married as a child in Turkey.	The Roma women who marry early, in Turkey, are at risk of negative mental health consequences. This includes depression, anxiety, stress, paranoid thoughts and psychoticism. Larger sample study sizes on child marriage on the effect of mental health will shed further light on how to prevent it.	The cross-sectional study design means that causality cannot be ascertained. Roma girls who were married but were under the age of 18 were excluded due to legal reasons
17	Mental health status of early married girls during the COVID-19 pandemic: A study in the southwestern region of Bangladesh	Nishat, Jannatul Ferdous, Shovo, Taufiq-E-Ahmed, Ahammed, Benojir, Islam, Md Akhtarul, Rahman, Mohammad Mizanur, Hossain, Md Tanvir.	2023	Southwestern region of Bangladesh during the COVID-19 pandemic	304 girls	Girls who were married off during the COVID - pandemic in Bangladesh	13 to 19	Female	Quantitative Cross-sectional	To assess the prevalence of mental health problems among early married girls during the covid-19 pandemic.	Early marriage causes poorer mental health problems for young women. After marriage, financial hardship and IPV can cause mental health problems, which needs to be negated with better interventions. This will help improve the girls' social status and decrease mental health problems.	Again, this is a cross-sectional study which means causality cannot be inferred. Secondly, age at marriage and mental health status may be subject to recall bias and social desirability bias
18	Fostering Protective Assets Among Syrian Refugee Girls Who Experience Child Marriage: Findings from a Formative Program Evaluation.	Whiting-Collins, Lillian, Tawk, Mona, Karp, Celia, Robinson, W Courtl, Metzler, Janna.	2022	Syrian refugees living in Lebanon	13 in-depth interviews and nine participatory discussion (n = 51)	Engaged, married or divorced Syrian refugee girls aged 13 - 18 living in lebanon	13 to 18	Female	Qualitative Focus group discussion and in-depth interviews	To identify potential and actual influences on the progress and effectiveness of the International Rescue Committee's (IRC) Life Skills Tailored Package for Early Marriage.	This program has helped engaged, married and divorced Syrian refugee adolescent girls develop personal resources and adaptive capacities. Girls who need to be taken into account are those who demonstrate intersecting vulnerabiltiies such as girls with physical or mental disabilities.	Social desirability may cause the girls to underreport their experiences of child marriage and its consequences. The key influencers who participated in the interviews are the ones who were most engaged in the program and so there is selection bias

Table 8: Study characteristics (continued)

Number	Title	Author	Publication Year	Study Setting	Sample Size	Study Population	Age of Participants	Sex of Participants	Study Design	Main Objectives of the Study	Conclusion /recommendations by Study Authors	Limitation of Study
19	There should be some freedom in our lives'. Exploring adolescent girls' experiences of child marriage	Presler - Marshall, Elizabeth, Oakley, Erin, Jones, Nicola, Alheiwidi, Sarah, Mitu, Khadija, Yadete, Workneh, Youssef, Sally, Guglielmi, Silvia, Baird, Sarah, Matachowska, Agnieszka.	2023	Rohingya refugees in Bangladesh; Syrian and Palestinian refugees in Jordan; Syrian and Palestinian refugees in Lebanon	238 for the quantitative survey and 47 for qualitative in - depth interviews	Married Syrian, Rohingya and Palestinian refugee girls living in camps	10 to 19	Female	Quantitative and Qualitative In-depth interviews and cross - sectional	To explore the myriad and intersecting ways in which child marriage truncates girls' trajectories and denies them agency over their own lives.	Girls are facing a myriad of intersecting disadvantages. They feel isolated and physically and emotionally exhausted as a result of their marriages. Many also face intimate partner violence. Programming is needed to take account of the girls' holistic needs, inlcuding their psychosocial wellbeing, and their health. An evidence base needs to be built on what works to support married girls.	Social desirability may cause the girls to underreport their experiences of child marriage and its consequences
20	Child Marriage in Yemen: A Mixed Methods Study in Ongoing Conflict and Displacement	Hunersen, Kara, Attal, Bothaina, Jeffery, Allison, Metzler, Janna, Tareq, Alkibsi, Elnakib, Shatha, Robinson, W Courtland	2021	Internally Displaced Persons in Yemen	1210 female adolescents for quantitative interviews; 411 people took part in focus groups and 30 key informant interviews	Internally displaced persons from three governorates: Sana'a, IBB and Aden in Yemen, who married as children.	10 to 49	Female and Male	Quantitative and Qualitative In-depth interviews and focus groups and cross - sectional	To assess the prevalence and risk of child marriage in Yemen, an area which was experiencing nationwide conflict at the time of the study.	Displaced girls experience child marriage more than boys or host girls. Child brides have a heightened vulnerability in conflict settings, and are more likely to experience social isolation, IPV and pressures on fertiility. More efforts to address child marriage in Yemen is needed and should include livelihood support, as well as conflict management and sexual and reproductive information.	The zones most prone to conflict and violent activity were excluded in data collection, so those most prone to child marriage may have been excluded. There is a social desirability bias, due to the sensitive nature of topic and therefore the girls may not have revealed their marriage status.

3.3 Quality of studies

Table 11: Evaluation of included studies

Qualitative studies	1.1	1.2	1.3	1.4	1.5	Score
Elnakib; Hussein et al	Y	Y	Y	Y	Y	100
Collier et al (2023)	Y	Y	Y	Y	Y	100
Whiting Collins et al (2022)	Y	Y	Y	Y	Y	100
Quantitative studies	3.1	3.2	3.3	3.4	3.4	
Kanselaar et al (2023)	Y	Y	Y	Y	CT	80
Fonseka et al (2022), 1	Y	Y	Y	Y	Y	100
Fonseka et al (2022), 2	Y	Y	Y	Y	Y	100
Elnakib et al (2022)	Y	Y	Y	Y	CT	80
Malak et al (2020)	Y	Y	Y	Y	CT	80
Elnakib et al (2021)	Y	Y	Y	Y	CT	80
Kutuk et al (2022)	Y	Y	Y	N	CT	60
Islam et al (2021)]	Y	Y	N	Y	CT	60
Inel Manav (2023)	Y	Y	Y	Y	N	80
Nishat et al (2023)	Y	Y	N	Y	N	60
Mixed methods	5.1	5.2	5.3	5.4	5.5	
Loutet et al (2022)	N	N	Y	Y	Y	60
Islam et al (2021)	N	N	N	Y	Y	40
Baird et al (2022)	N	Y	Y	Y	Y	80
Hamad et al (2021)	Y	Y	Y	Y	N	80
Guglielmi et al (2021)	Y	Y	Y	Y	N	80
Presler - Marshall et al (2023)	CT	Y	CT	Y	Y	60
Hunersen et al (2021)	Y	CT	Y	Y	Y	80

The quality of the studies was evaluated using the MMAT tool, the results of which are depicted in Table 2. Out of the twenty studies, a significant majority of the studies scored an aggregate score of more than 80 (Baird et al., 2022; Collier et al., 2023; Elnakib et al., 2022b, 2021a, 2021c; Fonseka et al., 2022a, 2022b; Guglielmi et al., 2021; Hamad et al., 2021; Hunersen et al., 2022; İnel Manav, 2024; Kanselaar et al., 2023; Malak et al., 2021; Whiting-Collins et al.,

2022), indicating a reliable quality of the studies. Five studies scored 60 (M. Mofizul Islam et al., 2021; Kutuk et al., 2024; Loutet et al., 2022; Nishat et al., 2023; Presler - Marshall et al., 2023)and one study scored 40 (M Mofizul Islam et al., 2021).

Concerns about methodologies primarily centred on whether the exposure of child marriage occurred during the study period. Most quantitative studies did not clarify this. However, some reported using a population of girls aged 18 – 24, as the exposure would have already affected all of the population by then, compared to those under 18 (Kanselaar et al., 2023). This approach aligns with the United Nations' recommendation for prevalence indicators (UNICEF, 2023a).

Additionally, there were some moderate concerns regarding how effectively the different components of the mixed methods studies were integrated to answer the research questions (Hunersen et al., 2022; M Mofizul Islam et al., 2021; Loutet et al., 2022). Ineffective integration would undermine the purpose of using mixed methods research.

3.4 Quantitative results

Six of the twenty studies included in this review were aggregated into a forest plot (Fonseka et al., 2022b, 2022a; M. Mofizul Islam et al., 2021; Kanselaar et al., 2023; Kutuk et al., 2024; Loutet et al., 2022). Odds ratio from other quantitative studies, included in this systematic review, were not available and therefore are not present in the forest plot (Baird et al., 2022; Elnakib et al., 2022a, 2021a; İnel Manav, 2024; Malak et al., 2021; Nishat et al., 2023). Due to the high heterogeneity in study methodologies, population demographics, and study quality, a meta-analysis was not feasible. Consequently, data from quantitative studies were not pooled, and the odds ratios presented in the forest plot reflect only individual studies, not an aggregate across all included studies. This plot depicts the odds ratios for girls who have experienced

child marriages experiencing intimate partner violence, psychological diagnoses and child stunting as outcomes, particularly in humanitarian settings. The forest plot is presented in figure 4.

Four studies involving 3513 participants were pooled to assess the odds of experiencing intimate partner violence associated with girl child marriage in humanitarian settings. One study focused on lifetime IPV (Kanselaar et al., 2023), while another study similarly reported on experienced IPV (Loutet et al., 2022). Lifetime IPV was defined by the study authors as experiencing any frequency of IPV, other than in the last 12 months (Kanselaar et al., 2023), while experienced IPV was defined as either experiencing physical and/or sexual IPV (Loutet et al., 2022).One study focused on physical, sexual and emotional IPV (Fonseka et al., 2022b). The last study focused on physical IPV (M. Mofizul Islam et al., 2021). All reported odds ratios were above 1, ranging from 1.45 to 2.66. One study had very wide confidence intervals (95% CI 0.49 – 14.58) (Loutet et al., 2022).

Additionally, one study investigated psychological diagnoses linked to child marriage, with an odds ratio was 2.90 (Kutuk et al., 2024). The final study focused on stunting in children under five whose mothers experienced child marriage in humanitarian settings, yielding an odds ratio of 0.95 (Fonseka et al., 2022a).

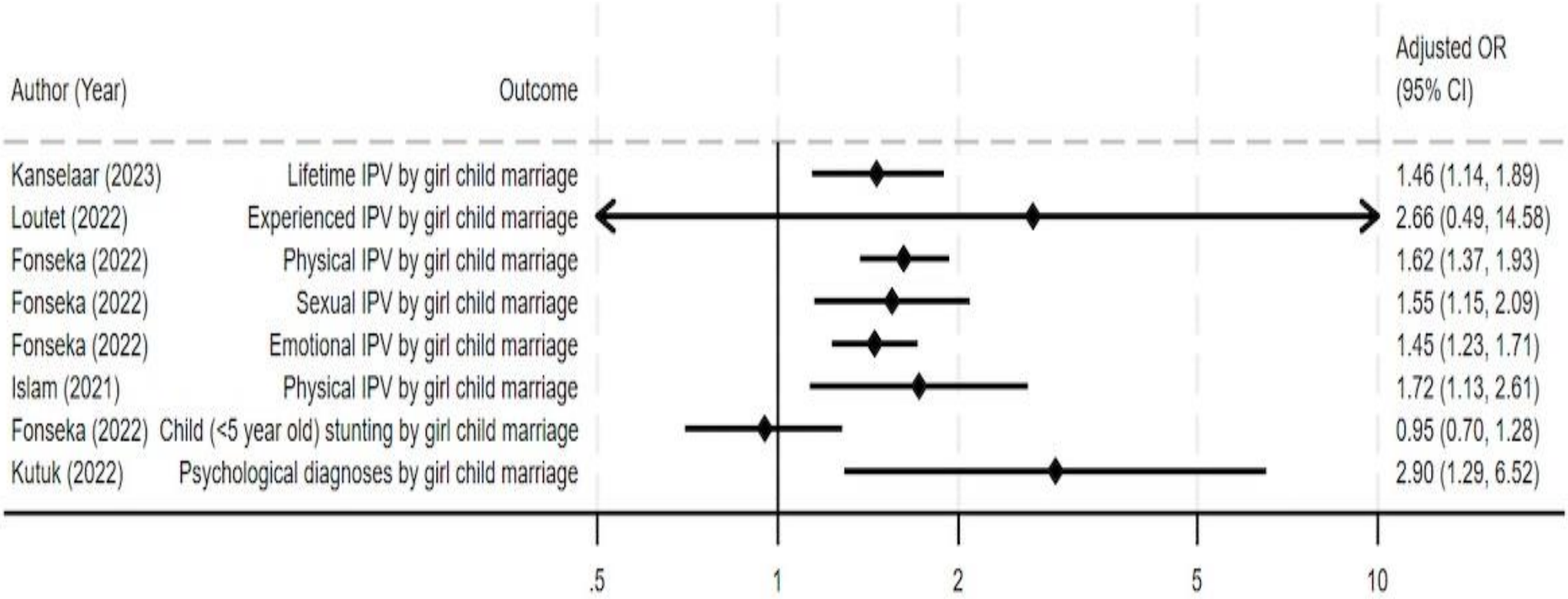

Figure 4: Forest plot of the health outcomes experienced by girls who have had child marriages in humanitarian settings.

3.5 Qualitative results
3.5.1 Summary of qualitative findings

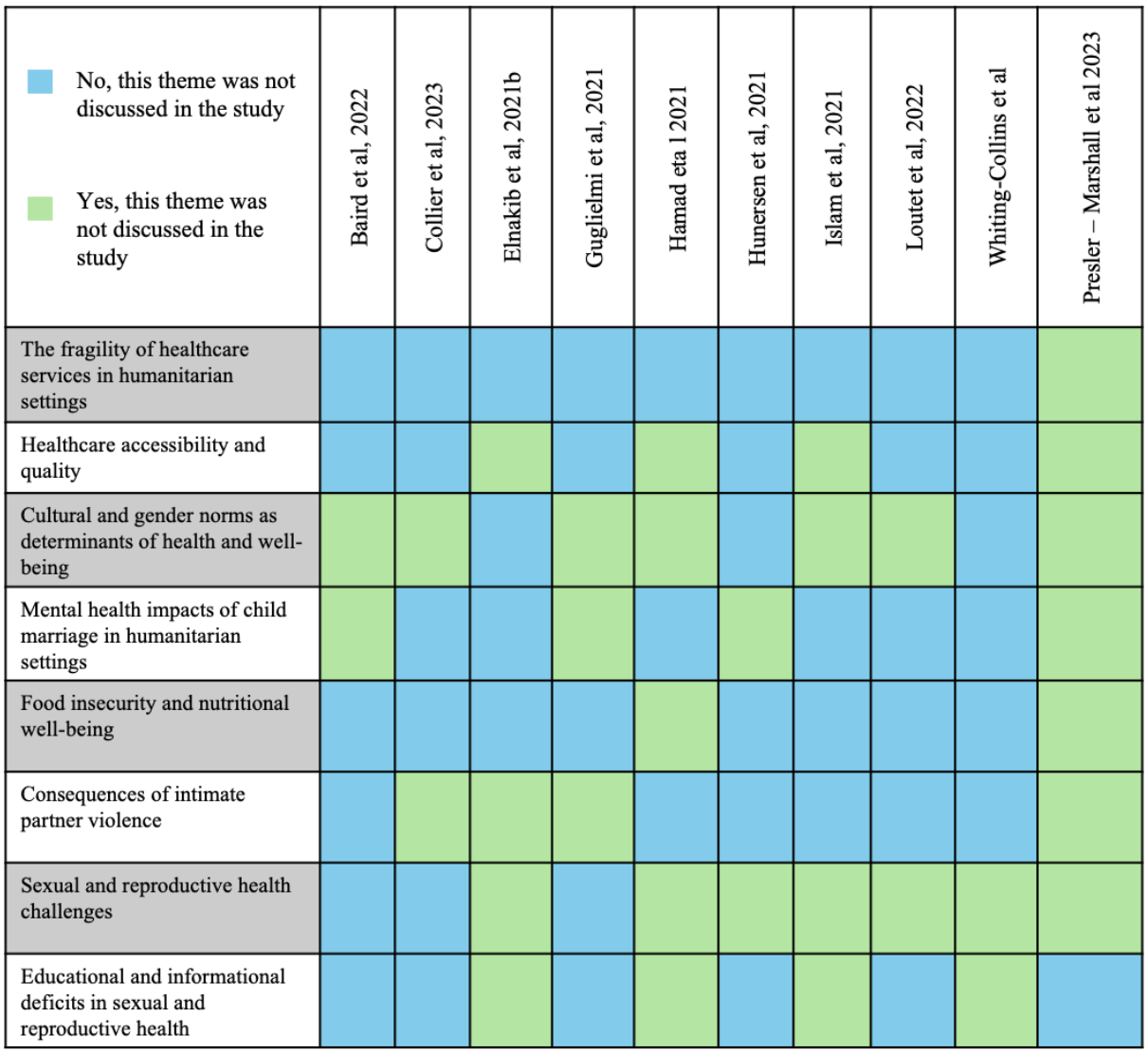

Figure 5: Summary of Thematic Analysis

The themes that emerged from the qualitative research were largely examined from the perspectives of the child brides and their thoughts on the health outcomes they suffer from. Health outcomes related to child marriages in humanitarian settings lead to six distinct themes and sub-themes: 1) The fragility of healthcare services in humanitarian settings, 1.1) Healthcare accessibility and quality, 1.2) Cultural and gender norms as determinants of health and well-being; 2) Mental health impacts of early marriage in crisis contexts; 3) Food insecurity and health complications in early marriage, 4) The multi-faceted consequences of intimate partner

violence and 5) Sexual and reproductive health challenges, 5.1) Educational and informational deficits in sexual and reproductive health. The themes are all summarised in Figure 5.

3.5.2 Themes

3.5.2.1 The fragility of healthcare services in humanitarian settings

Child marriage in humanitarian settings creates multiple barriers, for early married adolescent girls. This stops them from accessing healthcare, nutrition and support systems, when it is needed. The causes of which are depicted as a concept map (figure 5). The instability of these environments makes it difficult for these girls to access and receive adequate healthcare and support, leading to negative health outcomes. A married girl living in an area of conflict explained: "*The health centre has been destroyed and looted during the conflict*" (Age 18) (Presler - Marshall et al., 2023). In conflict zones, healthcare facilities are often weak or entirely non-existent. One qualitative study reported that the infrastructure of essential health services, in conflict areas, is frequently destroyed or looted (Presler - Marshall et al., 2023). This destruction extends to the loss of critical supplies like vaccinations and medicines, leading to preventable health outcomes such as maternal and perinatal mortality. The fragility of healthcare systems in humanitarian settings emphasises the alarming consequences for these young women.

The anxiety and fear that accompany living in conflict zones are intensified for early married girls, who are often just children themselves, carry the added burden of protecting their children. Out of fear for their children's safety, it can make them more reluctant to seek healthcare services, even when they may need it. Reports of violence against pregnant women and infant children during conflicts contribute to this reluctance, creating traumatic experiences. A woman who married as a child said: "*I was worried for my child. I wish I had never given birth to her. I hear they kill children*" (Age 20) (Presler - Marshall et al., 2023).

The fear and trauma associated with conflict environments can create significant psychosocial barriers, when it comes to accessing healthcare.

3.5.2.1.1 Sub-Theme: Healthcare accessibility and quality

The sub-theme of healthcare accessibility and quality reveals even deeper layers of challenges faced by young married girls during humanitarian crises. There seem to be significant regional variations in the availability and quality of healthcare services, particularly in humanitarian contexts. Girls in rural areas face geographical barriers, such as distance and difficult terrain, which make it difficult to access healthcare facilities. A girl explained: "*Most of the health facilities are far away from my home. This is a hilly area and every time I need to get to a health centre I need to descend and climb a medium-sized hill. Also, transports are unavailable in some roads, and I need to walk a long way*." (P7, age 19) (M Mofizul Islam et al., 2021). The lack of transportation options further compounds these difficulties. For instance, in hilly rural areas, the absence of roads and reliable transportation means that young mothers have to walk long distances in order to reach healthcare services. This is one of the main barriers, especially for those who are pregnant or have young children with them. A participant explained: "*In healthcare centres, sometimes half a day passes by as I stand in a long queue before finally seeing a doctor. My baby cries for food, and I can't give him breast milk standing in a queue. In the hot and humid weather, how long can one keep waiting in a queue? There is no priority for mothers with babies*." (P6, age 19) (M Mofizul Islam et al., 2021). The physical and logistical challenges faced by these young girls highlight the need for accessible and evenly distributed healthcare services. Girls and women, especially those with babies, are not tended to as urgently in healthcare facilities, highlighting the gender inequality. This adds another layer of difficulty, leading to a significant drop in facility-based service utilisation. Perceptions of neglect and lack of prioritisation by healthcare providers further discourage young married

girls from seeking healthcare. When healthcare workers, such as doctors and nurses, exhibit unwelcoming behaviour or indifference, it compounds the sense of isolation and neglect that these young women already feel. This unwelcoming atmosphere can lead to an overall dissatisfaction with the healthcare services and contribute to a reluctance to return for future care.

Furthermore, the cost of accessing healthcare services is another substantial barrier. In many conflict and humanitarian settings, public healthcare services are either overwhelmed or inadequate, forcing individuals to seek care in private clinics. The fees associated with private healthcare services pose a significant obstacle for young married girls, who often come from impoverished backgrounds. The financial burden of healthcare costs can deter them from seeking necessary medical attention, exacerbating their health vulnerabilities.

Overall, the instability of humanitarian settings worsens existing vulnerabilities for young married girls. This creates barriers that stop them from accessing healthcare services, leading to negative physical and psychological health outcomes. The geographical, logistical and financial challenges highlight the barriers to accessing quality healthcare. There is an urgent need for more equitable and accessible healthcare services in these regions.

3.5.2.1.2 Sub-Theme: Cultural and gender norms as determinants of health and well-being

Deeply entrenched cultural and gender norms significantly restrict adolescent married girls' access to quality healthcare, educational opportunities, and social support, leading to adverse physical and psychological healthcare outcomes. Across the themes, we found that cultural and gender norms seem to significantly influence the health and well-being of these young married women in humanitarian settings.

The valuation of young women in these societies is looked through the lens of their fertility. Their worth is tied into their ability to bear children. This cultural expectation can lead to severe consequences when women fail to meet these standards, including physical abuse by their husband's family and their guests. The decision about when to give birth and whether to use contraception is again often decided by the girls' husband's family. This leads to a loss of reproductive autonomy for the girls. Similarly, in terms of access to nutrition, women of the household are always prioritised last for good quality food, even when they are pregnant. Finally, when women need support for their psychological health, there seems to be a societal stigma attached, and so families stop the girls from reaching out and getting help. These cultural norms are also perpetuated in communities, through failing to support the women adequately when they do reach out for help with issues such as contraception and intimate partner violence.

3.5.2.2 Mental health impacts of child marriage in humanitarian settings

Five quantitative studies reported specifically on mental health outcomes among those who married early in humanitarian contexts. (Baird et al., 2022; İnel Manav, 2024; Kutuk et al., 2024; Malak et al., 2021; Nishat et al., 2023). Nishat et al reported an overall prevalence (depression, anxiety and stress) of 60.9% in Bangladesh. Malak et al reported a 39.5% prevalence of depression and that the participant's age at marriage significantly correlated with anxiety and stress levels ($p = 0.01$). Kutuk et al reported an overall mental health outcome prevalence of 57.4% (this includes: post-traumatic stress disorder, depression, obsessive compulsive disorder and learning disorder).

Humanitarian crises can worsen mental health outcomes, such as post-traumatic stress disorder and depression, for adolescent girls who married early. These girls face social isolation, financial stress and overwhelming domestic responsibility, all of which compound and cause

poor mental health. The unique mental health challenges experienced by young married women are often magnified by the unstable environments in which they live in.

Social isolation is a significant contributor to the mental health challenges faced by these girls. Child marriage often results in a drastic reduction in access to friendship networks, causing stress, anxiety and psychological distress. Conflict frequently forces families to move, leading to a loss of peer support, as girls leave their friends behind. Post-marriage, they might find themselves without the companionship and emotional support of their peers. This isolation is worsened by the restriction imposed by husbands and in-law families, who often limit the girls' outdoor leisure activities, further binding them to their homes. As married Syrian girl in a host community in Jordan explained: "*After marriage, the number of my friends has declined, and this has affected me so much. I feel that I have no one. The conditions here are so difficult without my friends*." (Age 17) (Baird et al., 2022).

Additionally, the heavy load of household and childcare duties confines the young married girls to their homes, preventing them from forming new social connections. The internalisation of emotions, by not being able to share good news or worries with anyone results in psychological distress, leading to emotional isolation. In many cases, girls have reported that they are also restricted from visiting their natal families, either due to the conflict itself or the restrictions imposed by their husbands. A young Palestinian woman, who married below age 18, from Jordan explained how, '*He [her husband] banned me from going out, even to my parents' house.'* (Age 18) (Presler - Marshall et al., 2023).This control over communication often extends to monitoring or censoring interactions. Some husbands seem to only allow communication with their natal families, through non-interactive methods such as pre-approved voice recordings. A Syrian mother of four said: *"He does not give me the phone to*

use it. He would turn on the recording for a voice call and then send it to them." (Age 18) (Presler - Marshall et al., 2023).

Married girls who miss their natal families express significant emotional distress and a longing for familial support. A young woman from Zone 5 (Afar), who married at age 17, stated, '*I miss my family very much*.' (Age 20) (Presler - Marshall et al., 2023). Even when they do manage to have limited interactions, the advice they receive from their natal families tends to focus on practical matters, such as advice for household chores, rather than offering emotional support. A girl from South Gondar (Amhara) explained that while she sees her mother often, they discuss only topics such as '*household matters like cooking and getting ready by storing enough flour before getting empty'*. (Age 17) (Presler - Marshall et al., 2023).There is a push for the girls to prioritise marital duties and obey their spouses, reflecting the cultural norms and practices in that country. Mothers of married also endorse marital obedience and discourage the disclosure of marital issues, further emphasising that the girls are emotionally isolated.

The high burden of household work also contributes to psychological distress. Young married girls often find themselves having to meet the expectations of family members, which puts an immense pressure on them. A Syrian girl living in Lebanon explained that she does all the work for her household and feels detached from her own life: '*I take care of all the housework and the cooking... We are a family of 13. My mother-in-law makes me take care of her young children and my husband's children from his first wife as well. I am always exhausted, and I do not feel I have a life. I do not feel anything, I am not even sad anymore. I am just doing the work as a machine.'* (Age 17) (Presler - Marshall et al., 2023).This is exacerbated by husbands who rarely participate in domestic responsibilities. This lack of support further adds to the feelings of stress and frustration. Another major factor is financial strain, heightening household tensions and leading to intergenerational competition for resources. Anxiety about

providing for their children's future and meeting basic needs, in these humanitarian settings, further affects their psychological health. A Rohingya girl explained that she cannot stop worrying about her children's future: *'I have three children... I have no assets, no money... I worry about that.'* (Age 17) (Presler - Marshall et al., 2023).

Economic insecurity, worsened by broader socio-economic challenges such as regional conflicts, pandemics and droughts, adds to the mental distress faced by these girls. They frequently report that they feel extremely unhappy and are stressed. They reminisce on their pre-marriage days. Many also feel that life has stopped for them, and that they feel a lack of purpose. One girl mentions how sad she feels as she couldn't complete her education due to her child marriage. The loss of aspiration further adds to their mental health struggles. A 17-year-old married Syrian refugee girl, living in a host community in Jordan reported: "*There was an agreement to complete my education during the engagement period. Then I got married. Then the story was lost. I wanted to complete my education but then I had the baby…I was not able to study. So, I'm filled with sadness*." (Age 17) (Baird et al., 2022).

The extent of the girls' emotional distress does not stop at depression; it has been reported that some girls have had suicidal thoughts or ideations. A 14-year-old girl from South Gondar (Amhara region, Ethiopia) explained *'I wanted to kill myself.' (*Age 14) (Presler - Marshall et al., 2023). This seems to happen especially in those that have married against their will or are experiencing violence. Another source of emotional trauma that the girls seem to experience is after divorce. Societal stigma attached to divorce, especially in these cultures, adds to the feelings of isolation. Cultural norms and fear of judgement stops the girls from seeking professional emotional support or disclosing their struggles. Therefore, more needs to be done to target this specific population.

Despite the severe mental health outcomes that young married girls face, they seem to have minimal access to formal psychosocial support services across various contexts. Furthermore, even when some girls do have access to these support services, it is underutilised due to the stigma attached to mental health and family reluctance. Therefore, the availability of the service does not necessarily guarantee they will use it. The majority of the psychosocial support services are seemingly provided by gender-focused NGOs. This makes sure the delivery of their services is adapted to what their population needs. These programmes help married girls, by helping them improve communication with their husbands and also coping with divorce. However, a more targeted professional psychological support services are needed to help young married women in humanitarian contexts.

3.5.2.3 Food insecurity and nutritional well-being

There is a limited access to food resources and adequate nutrition, especially in humanitarian settings, among women who married as children. This can lead to severe health complications in these populations, highlighting the need for targeted food security interventions. These women frequently struggle with hunger and malnutrition, and are unable to meet their basic needs, including acquiring sufficient food. The negative impact on their health is profound, particularly regarding nutritional outcomes. A Palestinian young woman (now separated), also from Jordan, added that her in-laws told her that too much food was bad for her baby: *'I used to suffer from malnutrition. They didn't give me enough. They said it wasn't good for me because it negatively affects the baby.'* (Age 18) (Presler - Marshall et al., 2023). Specifically, climate change can profoundly exacerbate food insecurity. Droughts, for example in Ethiopia, are becoming more frequent due to climate change which negatively affects food security.

Food insecurity causes significant psychological distress for early married women, due to concerns about feeding their infants and ensuring proper nutrition. The emotional impact of food insecurity causes the girls to experience feelings of sadness and desperation. In Gaza, one 16-year-old mother from Shajaia was worried about food shortage, saying, '*We have spent some days with no food at home. I had to sell my jewellery to buy food'*. (Hamad et al., 2021).Another Gazan girl explained, '*I cry sometimes when I am hungry, and I don't have food. I try to sleep to forget food and my children do the same*'. (Hamad et al., 2021). The emotional distress caused by hunger and lack food can lead to worser mental health outcomes. To cope with hunger, some girls resort to strategies such as sleeping to forget their hunger. This food insecurity deeply affects their overall health and well-being.

Mothers-in-laws' are reported to use food as a tool to control these young brides. This exacerbates the problems of food insecurity affecting these girls. This has contributed the girls to use desperate measures, such as selling jewellery to buy food. Mothers-in-law often exert control over access to food by locking the house and restricting the movement of the girls, preventing them from obtaining sufficient and nutritious food. These tactics are usually used as a form of punishment, when the girls do not obey the rules of the family they married into. A divorced girl from Shajaia said: '*When I was married, my mother-in-law used to go outside the house and lock it, so I was unable to get food. Also, at lunchtime, she was... distributing it [the food] as she likes. She never gave me or other daughters-in-law sufficient or good food. I convinced my husband for a while to bring me food. When she knew, she prevented that. Once she kept me three days without food'* (Hamad et al., 2021). They also seem to distribute more food to others in the family, prioritising to the men in the family. The unfair treatment and food insecurity within the household causes significant emotional distress and negative effects on physical health.

Pregnant married adolescent girls are particularly vulnerable to food insecurity. Despite being pregnant, married girls may still face a lack of access to sufficient food. They may face malnutrition due to deprioritisation within the household, even if they are pregnant and need the extra nutrition for the health of the baby. A 19-year-old Syrian girl living in Jordan reported "*They prevented me [eating] food and fruits. I was pregnant at the sixth month and there was no food"* (Presler - Marshall et al., 2023). The lack of access to sufficient food negatively affects both the health of the mother and the health of the foetus.

3.5.2.4 Consequences of intimate partner violence

Intimate partner violence (IPV) manifests in several forms of abuse, significantly impacting the lives of young married girls. Many girls describe experiences of IPV, including physical, sexual, financial and verbal abuse. The husbands also seem to limit the girls' freedom and restrict their movements out of the house. The most common type of IPV seems to be physical violence, particularly beatings. IPV can lead to severe psychological consequences. The trauma inflicted by IPV can drive some victims to suicide attempts and also results in miscarriages due to the physical violence they endure. A girl recalled her experience: *My husband, his mother and his uncle beat me. Even their guests would beat me. I neither ate nor drank anything and I always stayed alone. They would yell at me and insult me all the time.* (ID1320) (Collier et al., 2023). It seems that there is a widespread acceptability towards IPV, due to the cultural norms supporting it.

Cultural norms seem to play a significant role in silencing the voices of the girls who report IPV and often discourage them from talking about it. Even when girls try to seek legal justice from their community structures, they feel disregarded and dismissed when they do so. A married girl reported "*No one judges fairly if we complain. I complained to the head Majhi. He*

only says that my husband will be good and drives us away." (Age 17) (Presler - Marshall et al., 2023). These girls have no one to turn to and they also have the fear of retaliation from their husbands, and so they do not seek any further help. There is a pervasive lack of fair judgement and support, leaving these girls feeling isolated and helpless in their struggle against IPV.

The physical and psychological impacts of IPV are profound and multi-faceted affecting not only the women who married early, but also their children. The perpetuation of abuse within families underscores the need for comprehensive interventions and support systems. Addressing IPV, therefore needs a multifaceted approach. Provision of legal support, community education to challenge cultural norms, and development of supportive structures that provide protection for victims of IPV are needed.

3.5.2.5 Sexual and reproductive health challenges

Adolescent married girls often face immense pressure from their husbands and their in-laws to start childbearing soon after marriage. The mean age at first birth reported by a study in Lebanon, was 16.45 years in those girls who married under the age of 18. Similarly, another study also reported 16.85 years as the mean age at first birth. This urgency is driven by cultural expectations, as women are seen to be worth only for their fertility. A girl who was married as a child stated: '*If I have my period, my husband's family gets angry and says, "that means she is not pregnant*!"' (FGD, older girls, Jabalia) (Hamad et al., 2021). There also seems to be a desire for proving fertility, as marital relationships need to be secured and gain spousal support, care and attention. This is further complicated by the fear of failing to conceive promptly, as this might lead the husbands to take additional wives or start questioning the girl's fertility. This cultural pressure leads to significant sexual and reproductive challenges for married adolescent girls.

Decisions about fertility and contraceptive use are heavily influenced by husbands, families and communities, rather than an informed decision by the girls' themselves. There is a push from their families to avoid the use of contraceptives to ensure quick childbearing. There is a low amount of contraceptive use among married adolescent girls, especially before having their first baby. A girl reports her experience about the use of contraceptives: "*I became pregnant just two months after my wedding. I did not use contraception because my husband and parents-in-law wanted a baby."* (P5, Age 17) (M Mofizul Islam et al., 2021).

Married adolescent girls are pressured to have early pregnancies. However, early pregnancies are associated with health risks. Married adolescent girls often experience difficult pregnancies and complications due to their young age and physical immaturity of their bodies. This can lead to severe health consequences, including high maternal and infant mortality rates. The lack of access to quality prenatal care increases these risks, as young brides face barriers to healthcare services, especially in humanitarian settings, such as during conflicts. A Syrian married girl described her experience: "*My pregnancy was very difficult, I was scared when the baby moved, I wasn't aware about what to do and what to avoid during that period. The delivery was complicated, as the placenta was low, and I had bleeding and delivered through Caesarean section*" (Age 15) (Hamad et al., 2021).

3.5.2.5.1 Educational and informational deficits in sexual and reproductive health

Misinformation and lack of education on sexual and reproductive health among early married girls contribute to poor health outcomes and high mortality risks associated with adolescent pregnancies. There are widespread misconceptions about modern contraceptives, particularly the belief that they cause infertility among young nulliparous women and will not be able to give birth. Rumours about contraceptive uptake programs, such as that they are promoting it

for population control, exacerbates the problem. This misinformation and coupled with the cultural expectation of girls to prove their fertility, the use of contraceptives is heavily discouraged. Another Syrian girl reported: '*I gave birth four months ago, I am not taking any contraceptives, no one in my family allows that'* (Age 16) (Hamad et al., 2021)

There seems to be a significant lack of knowledge regarding sexual and reproductive health in young married adolescent girls. Many girls do not understand the concept of sex in itself, as well as how the foetus is formed and the development of the baby in the womb. Many young brides did not realise that they were pregnant until they were in their 6th month, due to the lack of knowledge around this topic. Elnakib et al reported that only 63% of the young married girls had sufficient knowledge about the dangers of early childbearing and 60% had knowledge about contraception (Elnakib et al., 2021a). In another Elnakib et al article, it was reported that knowledge of dangers of early childbearing and closely spaced births was a lot less prevalent (38% and 36% respectively) (Elnakib et al., 2022). Due to the lack of knowledge and reproductive counselling services for married girls, there seems to be increased fear and anxiety surrounding prenatal care, pregnancy and childbirth.

3.5.2.6 Conceptual Model

Figure 5 visually represents the causes and risk factors for the health outcomes resulting from child marriages in humanitarian settings. The causes are categorised into cultural and gender norms, socio-economic inequality, lack of education, poor quality of care and the humanitarian context. For example, cultural and gender norms, represented by blue in figure 5, overlap as a cause for multiple health outcomes. Intimate partner violence, sexual and reproductive health outcomes, mental health, and inadequate nutrition are all influenced by these norms. Multiple studies included in this review highlight the significant impact of cultural and gender norms on

poor health outcomes for girls who married early in humanitarian settings (Collier et al., 2023; Elnakib et al., 2021c; Guglielmi et al., 2021; Hamad et al., 2021; M. Mofizul Islam et al., 2021; Presler - Marshall et al., 2023).A few studies also highlight the socioeconomic inequality faced by the girls and their families, and the pressure of having to provide for their future, while facing humanitarian crises leads to financial anxiety and pressure. This leads to emotional distress and poor psychological health outcomes.

The impact of conflict and trauma from other natural disasters can cause direct and indirect effects on the health outcomes girls experience from child marriages (figure 5). Trauma from witnessing conflict can cause emotional distress and lead to poorer psychological health, such as PTSD and depression. Droughts and impacts of climate change can also cause food insecurity, which leads to worser mental health and nutritional well-being. Due to violence from conflict, healthcare is fragile and is prone to collapse, also leading to poorer health outcomes (figure 5).

Similarly lack of education also leads to poorer knowledge about contraception and sexual and reproductive health (figure 5). As a result, girls lose autonomy when it comes to decisions about their body, in terms of sexual and reproductive health. This leads to contraceptive misinformation, which can lead to adolescent pregnancy, and therefore poorer health outcomes. We also recognise that there could be stigma attached to girls learning about sexual and reproductive health topics, due to cultural and gender norms. Therefore, this is another area where more than one factor influences poor health.

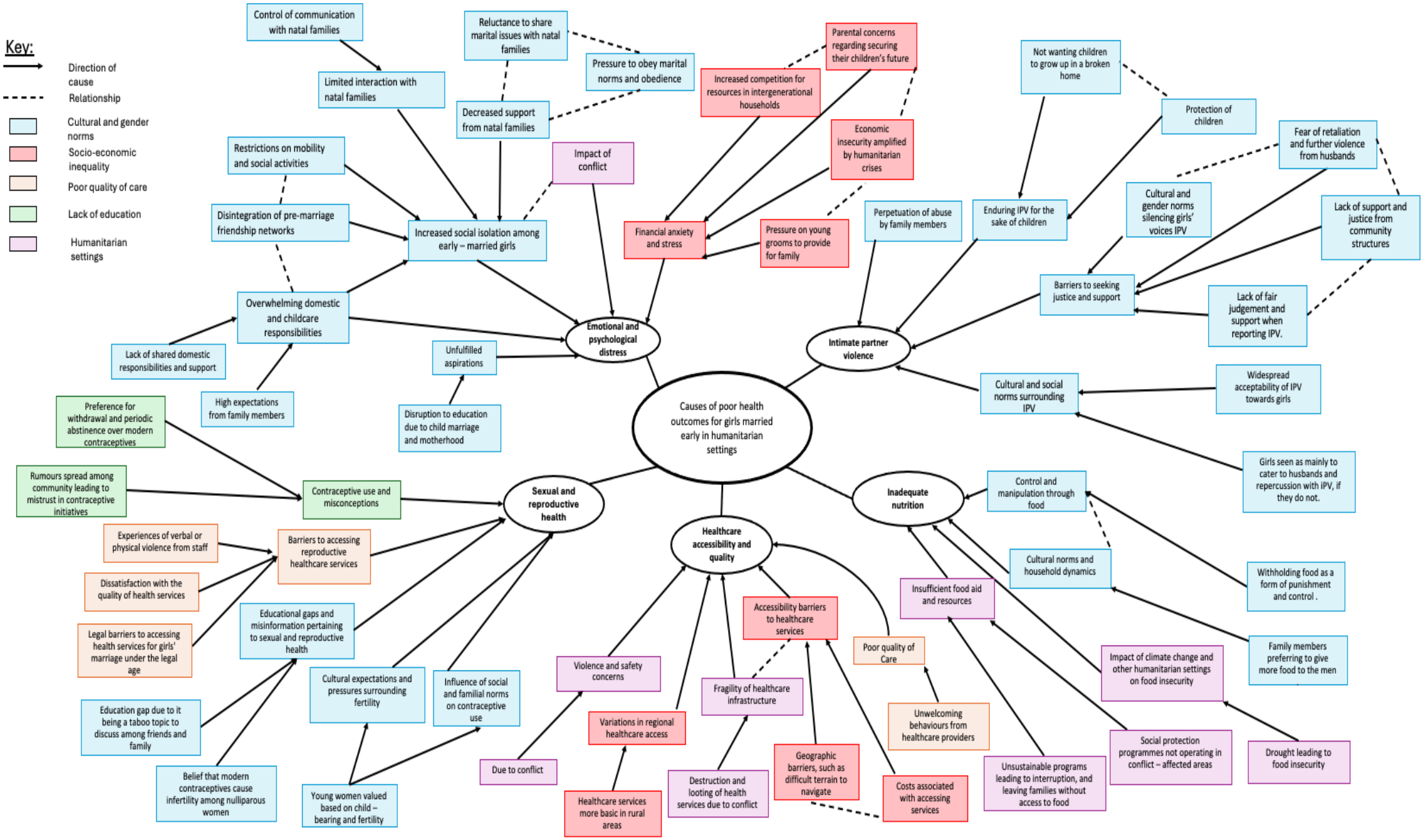

Figure 6: Conceptual framework for the causes of health outcomes for girls who married as children in humanitarian settings.

Chapter 4 Discussion

4.1 Synthesis of findings

This review aimed to explore the current qualitative and quantitative research landscape on the health outcomes of girls who have experienced child marriages in humanitarian settings. The results indicate that those who have experienced child marriages in these settings have poorer health outcomes. This includes suffering from mental health disorders, nutritional deficiencies, intimate partner violence and poor sexual and reproductive health. These health outcomes can be explained by several reasons such as cultural and gender norms, lack of education, socioeconomic inequalities, the fragility of humanitarian settings and poor quality of care.

Our results indicate that healthcare systems in these settings are fragile. Conflicts can devastate infrastructure due to violence and looting, causing another barrier for accessing quality healthcare. Rural areas often suffer from unequal healthcare distribution, forcing women to travel long distances to urban centres. This is often unaffordable and physically challenging due to difficult terrains.

Child marriages in humanitarian contexts increases the prevalence of mental health diagnoses, such as depression. The qualitative studies in our systematic review suggest that girls often feel sad and hopeless after marriage, particularly in humanitarian settings. The results indicate that psychological distress occurs as a result of multiple overlapping factors, such as social isolation, heavy household and domestic responsibilities, decreased support from natal families, financial stress and unfulfilled aspirations. These factors all seem to arise from cultural and gender norms, where girls are expected to fulfil their duties of being the homemaker, while being obedient to the family they married into. The odds ratio from the quantitative data for psychological diagnoses is 2.90 (figure 4), suggesting there is a significant risk for those who married early to suffer from mental health problems.

Nutritional deficiencies in humanitarian settings caused by droughts and conflicts, lead to poor health outcomes. Food scarcity also causes psychological distress due to food insecurity and concerns for their children's well-being. Cultural and gender norms often dictate food distribution, with mothers-in-laws controlling access to food, ensuring the men of the family are prioritised and using food as a means of control over girls. Insufficient and unsustainable food aid further exacerbates these issues, especially when conflict of natural disasters disrupts supply chains.

The data suggests that child marriages in humanitarian contexts increases the odds of IPV occurring, which is supported by the odds ratios of more than 1 (figure 4). It is also backed up by the qualitative studies, in this systematic review, where girls describe the physical abuse they endure, as well as emotional and sexual abuse. Cultural and gender norms seem to exacerbate this issue, which even extends to the justice system. As a result, girls do not receive the support needed to deal with IPV properly. The data also suggests that the abuse in the household frequently extends to the children as well, which is another factor to be considered. IPV causes psychological distress for women affected which can lead to severe consequences, such as suicide.

Sexual and reproductive health is another critical area of concern, as demonstrated by our study. High maternal and infant mortality rates are high due to adolescent pregnancies and cultural pressures to prove fertility and fulfil traditional childbearing roles. Contraceptive use is low, influenced by a desire to avoid birth spacing and decisions controlled by husbands, leaving girls without agency. There is also a lack of sexual health education, compounded by cultural taboos, leading to widespread misconceptions and fear of contraception.

4.2 Contribution of findings to the wider literature

Studies specifically looking at child marriages in humanitarian settings is scarce, despite an increase since 2017. The reasons for this could be that there has been an increase in the frequency of humanitarian crises, such as droughts, floods, the COVID-19 pandemic and armed conflicts, leading to an increase in child marriages (Bellizzi et al., 2021b). Conversely, this a challenging environment to conduct research and participating in research may not seem an appropriate priority depending on the person's circumstances. The impacts of child marriages are numerous, such as unintended births and pregnancy terminations, psychological distress and food malnutrition, all causing poor health outcomes, therefore warranting researchers to look into it. Another reason for the increase in the number of studies is that the abolishment of child marriage has been included in the 2030 sustainable development goals, since 2014 (United Nations, 2015a).

The results from this study emphasised that the fragility of healthcare services, especially in humanitarian settings, creates a robust barrier to access healthcare. This means those who have married early and need adequate healthcare support, fail to receive it, leading to negative health outcomes. There is a lack of research available in humanitarian settings, due to the volatile nature of the environments, making it difficult for researchers to work in (Kohrt et al., 2019). Low funding adds another barrier for researchers to operate in these areas (Kohrt et al., 2019). This makes it difficult to understand the barriers the population face, when trying to access healthcare services. Other studies have also reported that access to healthcare services and utilisation is low during humanitarian crises (Jordan et al., 2021). For example, the conflict in Yemen destroyed infrastructures, collapsed the economy, increased the number of displaced people and caused inaccessible services in the country (Dureab et al., 2021). It was estimated that 50% of the Yemeni public health facilities were not fully functional and even the ones that

are fully functional have severe shortages of staff, basic equipment and essential medicines (Dureab et al., 2021). This shows us the extent to which healthcare services are fragile and can be rendered unfunctional during humanitarian crises. This is made worse when there are not enough studies being generated from these contexts and therefore, we cannot develop resilient healthcare services (Kohrt et al., 2019).

Additionally, socioeconomic inequality is worsened in humanitarian settings (Fürst et al., 2010). Therefore, those affected by child marriage would find it even harder to access to healthcare, as many already face poverty in stable environments (Pourtaheri et al., 2023). The costs of healthcare are high, and due to this those who have experienced child marriage may not be able to obtain these services. As a result, universal health coverage is not achieved. A few studies have observed the effect of conflict on health outcomes and found that conflict can exacerbate health inequities (Bornemisza et al., 2010). One of the factors, found in this study, which affect health equity seems to be geographic disparities in access to healthcare (Bornemisza et al., 2010). Similarly to the findings in our study, it was observed that conflict degrades the infrastructure of the country, such as transportation. (Bornemisza et al., 2010) This affects the ability of people to travel to services. Loss of health workers in areas of conflict also increase the inequity. They also found that the health system in rural areas is often more affected by conflict than in urban areas (Bornemisza et al., 2010). Due to conflict, the most skilled and senior health professionals leave first. This means the quality of the healthcare services in these areas are poor. The result is that health outcomes are worser for these populations (Bornemisza et al., 2010).

A study looking at child marriage as the predictor for combined measure of physical and/or sexual IPV, found an odds ratio of 1.41 (married under the age of 15) and 1.42 (married at age 15 – 17) (Kidman, 2016a). In comparison, the studies we presented have adjusted odds ratio

figures of 1.62 and 1.72 for physical IPV and 1.55 for sexual IPV (figure 4). The adjusted odds ratio presented in our study of experienced IPV by girl child marriage is 2.66 (figure 4). This suggests that there may be a greater odds of experiencing IPV for those who have married early, in humanitarian settings, compared to a non-humanitarian setting, as the odds ratio is almost double the value. This supports the theory that humanitarian settings cause worser outcomes for those who married as children. It is also said that cultural and gender norms play a factor for those experiencing IPV, as there is more acceptance of gender inequality and patriarchal views, especially by women themselves. This reinforces that men are in a position of power and dominance over women. In a study, it was found that endorsing patriarchal gender norms was associated with a higher risk of experiencing all types of IPV (physical, sexual and emotional) (Hayes and Protas, 2022). Other risk factors listed by the study for experiencing IPV in child marriage, include lower levels of education, limited employment and poverty, gender inequality, and endorsement of patriarchal norms and attitudes (Hayes and Protas, 2022). These risk factors could be worsened in humanitarian settings, such as limited employment, and poverty, which could explain why these girls face higher risk of IPV.

A study which took place in Ethiopia and Niger, found that psychological well-being (measured using the psychological general well-being index) was negatively associated with marriage before 15 years (John et al., 2019). Furthermore, psychological well-being had improved with age at marriage in Niger (John et al., 2019). We found similar results in our study where the odds ratios by girl child marriage for psychological diagnoses, was 2.90 (figure 4). This meant those who experienced child marriage were twice as likely to have poor mental health outcomes. Even though there is a wide confidence interval (1.29 – 6.52), the range of numbers are above 1, indicating the there is a positive association between girl child marriage and psychological diagnoses (figure 4). A narrative review of mental health outcomes in child

marriage theorised about the various drivers of emotional distress in child marriage (Burgess et al., 2022). One of the main drivers was controlling behaviour and reduced agency, where the women were limited to their homes and were watched over by their family, as well as their community (Burgess et al., 2022). We found similar results, where social isolation was caused as a result of restriction of girls' movements by their husbands and relatives (figure 5). We add that this is as a result of cultural and gender norms, where women are limited to their roles as wives and mothers, rather than outside the home, as depicted by our conceptual model (figure 5). Therefore, the girls restricted on their social and leisure activities. Finally, we also found that conflict in itself could worsen the mental health issues for those who are married early, due to the traumatic experiences of witnessing violence and fear of protecting their children's safety.

One quantitative study in our systematic review revealed that there is no association between child marriages and stunting in children under five (figure 4). However, it is hypothesised that due to conflict settings, there were more financial aids (Fonseka et al., 2022a). Food was available and as a result, children did not experience any nutritional deficiencies (Fonseka et al., 2022a). However, wider literature suggests the opposite. Children of mothers who married before the age of 18, were significantly more likely to experience stunting (Adjusted OR = 1.201, 95% CI: 1.11–1.72), wasting (Adjusted OR = 1.519, 95% CI: 1.15-2.00), and being underweight (Adjusted OR = 1.150, 95% CI: 1.09–1.82), when compared to children whose mothers married at age 18 or older (Mim et al., 2024). Another study found a high overall prevalence of anaemia among female adolescents at 23.8% (95% CI; 22.3-25.2) (Tiruneh et al., 2021). The multivariable multilevel analysis indicated that individual-level marital status (AOR = 1.53, 95% CI: 1.06-2.02) was positively associated with anaemia among female adolescents, emphasizing the link between early marriage and poor health outcomes

(Tiruneh et al., 2021). The qualitative studies included in our review also suggest the same. Many girls report how there is insufficient food aid available in humanitarian settings, and how droughts and climate change in general is affecting food security. This unavailability of food can cause poor health outcomes in women. Our study also adds to the wider literature that food is used as a mechanism to control girls and their obedience to the family they married into (figure 5). This plays into the cultural and gender norms highlighted, where women are deprioritised in terms of access to food, highlighted by our conceptual model (figure 5). The economic instability also is another factor, in humanitarian settings, which stops these girls from accessing nutritious food.

Our study aligns with previous research indicating that child marriage significantly increases the likelihood of adolescent pregnancy. Specifically, three studies found that child marriage increased the odds of giving birth before the age of 20, while two studies reported an increased likelihood of giving birth before the age of 18 (Fan and Koski, 2022b). Additionally, it was observed that those who married before the age of 18 had their first child at a younger ages on average compared to those who married earlier (Fan and Koski, 2022b). Our data found in the study supports this theory, with the mean first age at birth being 16.45 years, illustrating that early marriage is associated with earlier childbearing. The cultural and gender norms prevalent in these settings contribute to these findings. Early marriage often results in reduced power and reproductive rights for women, exacerbating the power imbalance between husbands and wives, typically due to age differences. Furthermore, the use of contraception before the first childbirth was notably low (68% in Bangladesh) and Bangladesh also exhibited the lowest prevalence of maternal healthcare use (Godha et al., 2013b).

In humanitarian settings, access to antenatal care is limited. In Bangladesh, women who married at 14 years of age made 14.5% fewer antenatal visits compared to those who married

at 18 years or older (Godha et al., 2013b). Similarly, in Nepal, women who married between the ages of 15 – 17 made 7.8% fewer visits to antenatal care, than those who married as adults (Godha et al., 2013b). This highlights the need to focus on antenatal care utilisation, especially in humanitarian settings, where access to healthcare services is often severely restricted. Globally, there is an association between child marriages and increased maternal and infant mortality (Raj and Boehmer, 2013b). Research by Raj and Boehmer demonstrated that countries with higher rates of child marriages also showed higher non-utilisation of maternal health services (Raj and Boehmer, 2013b). This shows the link between how reduced access to these health services can lead to poorer reproductive health outcomes, including maternal and infant mortality.

A significant proportion of adolescent girls globally have unmet sexual and reproductive health (SRH) needs. As of 2017, it was estimated that approximately 36 million adolescent girls aged 15 – 19 years old were married or sexually active and did not want to become pregnant, yet more than half of them were not using modern contraceptive methods, despite needing them (Casey et al., 2020). The 2018 revision of the Inter-Agency Field Manual highlights the importance of contraception in reducing maternal mortality in humanitarian crises (Foster et al., 2017). However, research from Ethiopia, Zimbabwe and Tanzania indicates that poor knowledge about contraception is a significant barrier to its use (Wondimagegne et al., 2023). This is often due to a lack of reproductive health education in schools, suggesting better strategies to be used in school. In our study, only 60% had knowledge about contraception. Previous studies have estimated that among sexually active females, 50.9% had used contraception at some point (Pleaner et al., 2022). Yet, condom use was inconsistent, and many females failed to remember if and when they used a condom during their last sexual encounter (Pleaner et al., 2022). Negative perceptions towards modern contraception, due to perceived

side effects and misinformation, were common among adolescents, which we also found in our qualitative studies (Pleaner et al., 2022). Additionally, societal shaming and judgmental attitudes from health providers further hindered adolescents' ability to access contraceptive services (Wondimagegne et al., 2023). These barriers significantly impact contraceptive use and can lead to adverse outcomes, such as adolescent pregnancy and maternal and infant mortality.

Additionally, the judgemental attitudes of health workers and social norms must be addressed to improve contraceptive use among those who have married early in humanitarian settings. Providers' perceptions and attitudes are reported across various studies as being a barrier to contraceptive use (Sidibé et al., 2022). The community shames those that use contraceptive, thinking it makes them more promiscuous, since sexual relations before marriage is looked down upon (Sidibé et al., 2022). This highlights the needs for a better and more supportive environment for those who seek SRH services.

One study which looked at the drivers of child marriages, developed a conceptual framework for this (Psaki et al., 2021). They used qualitative data from Bangladesh, India and Niger, where child marriage is common, to tease out the drivers of child marriage. The main drivers the authors in this study mention are poverty and economic factors, lack of opportunity, social norms and attitudes and lack of agency (Psaki et al., 2021). Socioeconomic inequality was also pointed out by our results; girls who are the poorest are found to be at the highest risk of child marriage. This is exacerbated in humanitarian settings. Social norms and attitudes were also another driver in their conceptual framework, which was also found as a factor which drives long term health outcomes in child marriages (Psaki et al., 2021). They also mention a lack of opportunity, for example not having a job outside domestic role and also lack of agency, where they have no say in not wanting to marry at a young age (Psaki et al., 2021). These factors

overlap with social attitudes and norms, which we also found in our conceptual map, where for example, if girls wanted to go out and socialise, they would be restricted, and this is due to cultural norms overlapping with their lack of agency.

The concept map in our study (figure 5) ties into the social determinants of health (SDHs), which are non-medical factors that affect health outcomes, as defined by the WHO (WHO, 2023). Some examples of SDHs are education, food insecurity, structural conflict, access to affordable health services of decent quality (WHO, 2023). Addressing SDHs is key to prevent child marriages, but also its health outcomes, such as psychosocial wellbeing and intimate partner violence. A study asked participants about the factors that influence how they seek healthcare (Seta, 2023). The most common ones were availability, society, lack of independence and education. It was reported that the lack of availability of doctors to discuss mental health, meant they did not seek this type of healthcare (Seta, 2023). They also needed some type of incentive, which would allow them to keep coming back. Similarly, it was reported that societal view on mental health, that it being stigmatised, meant they were less reluctant to seek mental health support (Seta, 2023).

In humanitarian settings, children who marry often experience intersecting vulnerabilities that exacerbate the challenges they face. These intersecting vulnerabilities include a combination of factors such as age, gender, socioeconomic status, displacement and the breakdown of social structures in crisis contexts (Parsons et al., 2015). Individual level factors, such as disability, can intersect with those girls who have few economic opportunities, to lead to them having an even greater disadvantage. As a result, they might be seen as less capable of achieving independence. This, combined with inadequate access to specialized health services, education, and social protection, especially in rural or conflict-affected area, makes them more

likely to be married off at an early age, despite the increased risks to their health and well-being (Parsons et al., 2015).

Similarly, those marginalized by their sexual orientation or gender identity face heightened vulnerability in these contexts. In regions with restrictive laws and cultural norms around LGBTQI+ people, they may be subjected to exclusion, violence, and forced marriages as a way to "protect" them or resolve familial tensions (Human Rights Watch, 2016). The intersection of these individual vulnerabilities with structural factors like poverty, displacement, and weak legal protections increases the likelihood of early marriage. There seems to be limited research into how sexual orientation and gender identity may intersect with other vulnerabilities to increase the risk of child marriages (Human Rights Watch, 2016).

Global factors, such as climate change, economic instability, and the COVID-19 pandemic, further exacerbate these risks. Climate-induced displacement and economic shocks can push families into poverty, making early marriage seem like a survival strategy (van Daalen et al., 2022). Similarly, global economic policies and the pandemic's disruption of education and health services increase the vulnerability of marginalized girls to early marriage, limiting their opportunities for education, safety, and empowerment (UNICEF, 2021).

4.3 Strengths and limitations of the study

4.3.1 Strengths

This systematic review evaluated quantitative, qualitative and mixed-methods studies on the health outcomes of child marriages in humanitarian settings. This is one of the first reviews carried out regarding this issue and has therefore contributed to the identification of crucial gaps in the current child marriage literature. Secondly, due to the structured process of systematic reviews, there is a reduced risk of bias in selecting and analysing studies. To add to

this, the quality assessment of the included studies helps weigh the evidence more accurately. This is indicated by the overall quality of the studies, as the majority of the studies scored above 60%, in the quality appraisal. The inclusion of qualitative studies and having a mixed – methods systematic review means that the voices of the girls are heard too, since it has not relied on one type of methodology.

4.3.2 Limitations

Our systematic review mostly included data which is cross – sectional in nature and therefore limits our ability to understand causality between child marriages and its health outcomes in humanitarian settings. Therefore, more longitudinal studies are needed to observe how the relationships between variables and outcomes change over time. Secondly, many studies included in the review rely on self-reported data, and this may be biased due to social desirability, especially due to the sensitive nature of the topic (Althubaiti, 2016). Self – reported data can also be inaccurate affecting the reliability of the review's findings (Althubaiti, 2016). The included studies also vary widely in terms of design and methodology, introducing a high degree of heterogeneity into the data, making it challenging to draw conclusions. However, we have mitigated this issue by opting out of conducting a meta-analysis on the pooled IPV odds ratio data.

4.4 Implications of findings

4.4.1 Practice in humanitarian settings

Findings of this systematic review demonstrate the implications of child marriages in humanitarian contexts, in particular the health outcomes of the girls who married early. The results also indicate the drivers and causes of these health outcomes, which can be used to develop better practices in humanitarian settings to help this population.

One of the main health outcomes from child marriages in humanitarian settings that girls experience is poor mental health. Service provision needs to include accessible psychological counselling for these girls, which are available in a variety of settings (Burgess et al., 2023) . Displaced individuals and those in conflict zones frequently face psychological distress (Familiar et al., 2016). If we add on the aspect of having to marry early as a child, then the emotional distress is compounded leading to poor mental health. Therefore, establishing easily accessible counselling services can help mitigate the mental health impacts of such stress. Mobile counselling units and integrating psychosocial support into existing health services would be more accessible for affected populations. There are examples of flexible, mobile – based SRH clinics and camps, which remain in communities during humanitarian settings, so that marginalised adolescents can access them (Stark et al., 2021). Beyond accessibility, the quality and appropriateness of the psychological interventions also need improvement. Tailored interventions that consider cultural contexts and specific needs for the girls can lead to better outcomes. Healthcare providers must offer empathetic and non-judgemental care, ensuring women do not feel neglected or shamed. Training healthcare workers in cultural competence and patient-centred care can help achieve this.

Providing a holistic support system that includes psychosocial services, counselling, and legal aid is crucial (Paphitis et al., 2022). Survivors of gender – based violence often require legal assistance alongside psychological support. Integrating legal aid into psychosocial services can help address issues like IPV and GBV more effectively (Paphitis et al., 2022). However, these services should also not dismiss these girls and make sure as much support is given as possible, for a broad range of the challenges they face. Programs also need to make sure they assist women in managing households and caring for children (Collier et al., 2023). This can help them manage their relationships with their husbands and their families, in order for there to be

better communication and reduce these cultural and gender norms. As a result, this can reduce intimate partner violence.

To add on to this, financial instability is a significant stressor in humanitarian settings, exacerbating mental health issues. Therefore, financial assistance programs are essential. Cash transfer programs and livelihood support, especially farming opportunities, would allow them to be self-sufficient during droughts and floods (Gambir et al., 2024). This can subsequently improve mental health outcomes for this population. However, steps must be taken to make sure these programs are sustainable and accessible, to ensure the recipients can get the long – term benefits.

Furthermore, access to SRH services and in particular contraception, is vital in humanitarian settings (M Mofizul Islam et al., 2021). Outreach health workers and family planning workers should expand contraception services to ensure women and girls have the means to make informed choices about their reproductive health (M Mofizul Islam et al., 2021). There should be educational programs about SRH, which will help the girls and their families understand about this topic, so that misconceptions and fears aren't exacerbated (Elnakib et al., 2021a). There should also be education about pre-natal care, and the process of pregnancy and delivery. Expanding these services can help prevent unintended pregnancies, as well as sexually transmitted infections and improve overall SRH outcomes. Using male outreach workers to educate family members about SRH can be instrumental in breaking cultural norms and promoting gender equality. Men's involvement in SRH education can lead to more supportive environments for women and girls, facilitating better health outcomes

4.4.2 Future direction of research

There needs to be more research to understand the drivers and consequences of child marriages, particularly in humanitarian settings. We did not find any articles that were not in English, despite not having any language restrictions in our search strategy. This understanding is important, as the conditions in these settings are markedly different from more stable environments, therefore the factors contributing to child marriage can be complex, that only the local population can understand. Therefore, more research from the local countries is needed and should be encouraged, as well as funded from HIC countries.

Moreover, larger sample sizes are needed in studies examining the effect of child marriage on health outcomes. Additionally, there is a significant gap in the evidence base regarding what interventions are most effective in supporting the health of married girls. In particular, we need to know what interventions help for psychological outcomes, nutritional outcomes and for intimate partner violence. The UN refugee agency recommend the 'mental health and psychosocial support' (MHPSS) approach to help refugees and those affected by displacement and conflict (The UN Refugee Agency, 2024). This combines a variety of sectors, such as child protection, mental health services and GBV. This is multi-layered approach, combing aspects of providing basic services and security, strengthening community and family support, providing non-specialised support through workers, and clinical mental health and psychosocial services for those with severe symptoms (The UN Refugee Agency, 2024). This could be adapted for child marriages and integrated here too. More interventions need to be tested to determine their efficacy in improving health outcomes for this population.

Furthermore, better data collection and monitoring of child marriage and its health outcomes would be essential to prevent this phenomenon. Many lower- and middle-income countries

(LMICs) do not have the human and monetary resources to undertake robust data collection (Sankoh, 2017). These better practices would allow for the understanding of the effects of child marriage and what the causes are. As a result, effective interventions to prevent child marriage and its health outcomes. Building a better evidence base for what works to help prevent child marriages and reduce its effect on health outcomes would improve the lives of this population.

In lower- and middle-income countries (LMICs), most global health research is carried out by funding from high income countries (HICs) (Beran et al., 2017). This leaves the LMICs without any long-term investments into their infrastructure, management systems and human capital. This defeats the purpose of scientific equity in global health research, if the majority of the funding is from HICs. Furthermore, it is recommended that research capacity and robustness should be improved in these countries in a way that there is local involvement (Beran et al., 2017). Local people who live and work in LMICs know the issues they face and so are better placed to know which area of research needs more investment in, rather than those in HICs. This would allow for the research and health system to understand the local burden of disease, as well as the cultural and social contexts of that area.(Beran et al., 2017) Therefore, even for child marriage research, more research capacity building needs to occur in local countries, so that the SDGs are achieved in a sustainable way (Bhutta, 2003; Sankoh, 2017).

For effective interventions to be developed, especially in LMICs, we need to understand why people behave the way they behave. This ties into the behavioural theories, which has been used for health promotion and to change behaviours that lead to poor health. However, there are multiple factors intersecting at different levels, such as individual, family and community, that impacts an individual's behaviour (Evans et al., 2022). This is applicable in our study as well, where multiple factors such as socioeconomic status, humanitarian settings, and cultural

and gender norms interact, without which we cannot understand the health behaviour of the girls. A systematic review looked at the effect of implementation models used to change the health behaviours of their populations (Evans et al., 2022). They found that the majority of studies that used these implementation practice models were effective, helped changed the way people behave and also has small positive modifying effects on attitudes, beliefs and social norms (Evans et al., 2022). An article utilised the Fogg behavioural model to understand how social norms affect the use of modern contraceptives, focusing on the adolescent cohort (ages 15 – 24) in Sub-Saharan Africa (Agha et al., 2021). They found that social norms that discourage contraception had a statistically significant negative association with contraceptive use, meaning it does stop women using contraception (Agha et al., 2021). These models could help develop interventions to improve sexual and reproductive health in child marriages and humanitarian settings by focusing on behaviour change.

Chapter 5 Conclusion

The health of adolescent girls and women, who married under the age of 18 in humanitarian settings, has been neglected. Whilst an extensive body of evidence exists on the health outcomes of child marriages, the breadth of research is limited in humanitarian settings. Girls who married as children in humanitarian settings have difficulty accessing healthcare services and nutritious food, struggle with their mental health, face intimate partner violence and abuse from other family members, and have poor sexual and reproductive health outcomes. Many of these health outcomes can be explained by cultural and gender norms, socioeconomic inequalities, lack of education and as a result of being in a conflict setting. Further analyses that look at risk factors and prevalence of the health outcomes in this population and data collection and monitoring are needed to inform future interventions. For policymakers in these countries where humanitarian crises are frequent, better understanding of the contextual factors that drive the health outcomes of child marriages are essential to prevent and also establish effective interventions for this population.

Chapter 6 Reflection

6.1 Introduction

This chapter looks to critically reflect upon the experiences and skills that I have gained throughout my intercalated year of undertaking an MPhil. My interest in undertaking an intercalation year was developed during a four-week optional module in global health during my third year of medical studies. This module was a pivotal moment, as it exposed me to the complex and multifaceted issues that affect health on a global scale. Among the various topics covered, the issue of child marriages in India stood out to me. I was particularly struck by the profound impact this practice has on the health and well-being of young girls.

To delve deeper into this topic, I studied about the health implications on girls who have had child marriages in India. The findings were eye-opening and underscored the urgent need for more research and interventions in this area. I later presented my findings at the WONCA international rural health conference, an experience that was both exhilarating and humbling. The positive feedback and the recognition of the importance of my work further fuelled my passion for global health research and motivated me to pursue a master's in research. As a result, I wanted to do a masters with Dr. Tom Shepherd, as my supervisor, as he is an expert in Global Health topics.

6.2 Formulating the research question

The transition from a broad interest in global health to a focused research project was not straightforward. Initially, I struggled to narrow down my research question due to the extensive existing literature on child marriages. The task seemed daunting, and I felt overwhelmed by the prospect of finding a unique research question that had not already been explored.

Seeking guidance, I turned to my supervisor, Tom, who suggested examining the mental health challenges associated with child marriages. This direction aligned well with his expertise as a psychologist and promised to provide deeper insights into the psychological impact of such practices. However, our enthusiasm was short-lived when I discovered a narrative review already covering the mental health consequences of child marriages. This felt like a significant setback, and I questioned the feasibility of our project.

Determined not to give up, I continued my literature review, hoping to find a gap in the existing research. After extensive reading, I identified a crucial gap: no systematic review had comprehensively examined the health consequences of child marriages, particularly in humanitarian settings. This discovery was a turning point and provided a new direction for our research. It was a reminder of the importance of perseverance and thorough literature review in identifying unique research opportunities and I felt relieved that I would be able to contribute to the research in this field of child marriages.

6.3 Qualitative project

For the qualitative component of the project, we initially planned to collaborate with an NGO to conduct a study on the mental health challenges of child marriages in humanitarian settings. I had to contact several organisations to pitch our idea about this important piece of research that we wanted to undertake, as they would be able to provide us with easier access to the community of girls who have had child marriages. After several emails, and attempts a charity finally responded. This collaboration seemed promising, and we engaged with a charity interested in our research.

Despite our efforts and several meetings, we could not finalize the collaboration, and the project fell through, as we would not be able to finish the study within the deadline for my masters. This was a disappointment, but it was also a valuable learning experience for me personally. I learned how to effectively communicate and present research ideas to third-party organizations, which are skills that will be crucial in my future career. Writing concise and compelling pitches and navigating the challenges of unresponsive emails taught me the importance of persistence and resilience.

6.4 Practical experience

One of the most enriching aspects of my MPhil journey was the practical experience I gained through conducting a systematic review. The Research Methods in Health module provided a solid foundation in various research methodologies, equipping me with the tools needed for my project. Choosing to undertake a systematic review was both challenging and rewarding. Formulating a valuable and novel research question required extensive literature review and critical thinking. With guidance from my supervisor and expert advice from Jo Jordan, I developed an effective search strategy. This process was intricate, requiring a balance between broad search terms to capture all relevant articles and specific terms to focus solely on child marriages.

Using Rayyan, a systematic review software, I managed the inclusion and exclusion criteria for the articles. This process was complex, as the inclusion or exclusion of specific studies could significantly impact the results. Discussing these decisions with my supervisor, Dr. Tom Shepherd, helped refine my critical thinking skills and build confidence in my decisions.

Extracting data from the included studies was another challenging task, requiring meticulous attention to detail and effective data management techniques. These practical experiences

provided me with a solid foundation in conducting systematic reviews and managing large volumes of research data, skills that will be invaluable in my future research endeavours.

6.5 Lessons and skills developed

Throughout this journey, I have acquired a myriad of skills and learned several valuable lessons. The process of formulating a research question, for instance, taught me the importance of thorough literature reviews and the need for a unique research angle. This experience underscored the value of persistence and the ability to adapt to new information and challenges.

Working on the qualitative project, despite its eventual collapse, provided insights into effective communication and collaboration with third-party organizations. Crafting succinct and compelling pitches and maintaining professional correspondence are skills that will be essential in my future career.

The practical experience of conducting a systematic review was perhaps the most significant aspect of my MPhil journey. Developing a search strategy, managing inclusion and exclusion criteria, and extracting data from studies required meticulous attention to detail and critical thinking. Collaborating with experts and supervisors enhanced my understanding and confidence in these processes.

6.6 Personal Development

The challenges and setbacks I faced during this year have contributed significantly to my personal growth and professional development. I have learned to navigate complex research processes, communicate effectively with various stakeholders, and persevere in the face of obstacles. These experiences have not only enriched my academic knowledge but also shaped my approach to problem-solving and resilience.

Engaging with the global health community, whether through the WONCA conference or interactions with NGOs, has broadened my perspective and deepened my commitment to addressing health disparities. This exposure has reinforced my desire to contribute to global health research and make a meaningful impact on the well-being of vulnerable populations.

6.7 Mentorship and Collaboration

The guidance and support from my supervisor, Dr. Thomas Shepherd, my co – supervisor, Professor Christian Mallen, and other experts like Jo Jordan, have been instrumental in my journey. Their mentorship has provided valuable insights, practical advice, and moral support, helping me navigate the complexities of my research project. This experience has highlighted the importance of mentorship and collaboration in academic and professional development. Collaborating with my supervisors and other experts has also underscored the value of interdisciplinary approaches in research. Combining insights from psychology, global health, and systematic review methodologies has enriched my project and provided a more comprehensive understanding of the issues at hand.

6.8 Future Directions

Reflecting on my year of intercalation, I am excited about the future and the potential to build upon the skills and knowledge I have acquired. My immediate goal is to publish the results of my systematic review and present the findings at an international conference. This will not only contribute to the academic community but also raise awareness about the health consequences of child marriages in humanitarian settings.

Having conducted smaller research projects and audits in the past, this MPhil project has been my most extensive research undertaking to date. I have thoroughly enjoyed the process and I am eager to continue publishing on global health topics. My long-term aspiration is to pursue

the Specialized Foundation Program and eventually become an academic doctor. Conducting research will enable me to provide better care for my future patients and contribute to the advancement of medical knowledge.

6.9 Conclusion

In conclusion, my year of intercalation in the MPhil program has been a transformative experience. From developing an interest in global health to navigating the complexities of research projects, I have gained invaluable skills and knowledge. The setbacks and obstacles have taught me resilience, perseverance, and the importance of effective communication and collaboration. My passion for research and commitment to addressing global health disparities have been reinforced, and I am excited to continue exploring new research opportunities and making a meaningful impact on global health.

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Chapter 8 Appendix

8.1 Search Strategy

Ovid MEDLINE

1	child/ and marriage/	[2728]
2	(child* adj2 (marriage* or married or bride* or groom*)).mp.	[1910]
3	(adolescen* adj2 (marriage* or married or bride* or groom*)).mp.	[356]
4	(teen* adj2 (marriage* or married or bride* or groom*)).mp.	[144]
5	(early* adj2 (marriage* or married or bride* or groom*)).mp.	[1086]
6	(young* adj2 (marriage* or married or bride* or groom*)).mp.	[938]
7	(youth* adj2 (marriage* or married or bride* or groom*)).mp.	[71]
8	((boy* or girl*) adj2 (marriage* or married or bride* or groom*)).mp.	[339]
9	1 or 2 or 3 or 4 or 5 or 6 or 7 or 8	[6375]
10	refugees/	[13539]
11	disaster victims/	[259]
12	Refugee Camps/	[310]
13	refugee*.mp.	[19243]
14	(displace* adj1 (people or person*)).mp.	[1426]
15	exp armed conflicts/	[12147]
16	exp warfare/	[37587]
17	(war or wars or warfare).mp.	[83003]
18	conflict*.mp.	[175275]
19	disasters/	[21954]
20	exp natural disasters/	[26819]
21	disaster*.mp.	[53575]
22	(drought* or famine* or flood* or earthquake* or wildfire* or "tidal wave*" or tsunami*).mp.	[77982]
23	humanitarian.mp.	[7436]
24	"extreme event*".mp.	[1889]
25	persecut*.mp.	[2616]
26	genocide/	[203]
27	genocide.mp.	[785]
28	food insecurity/	[1572]
29	food security/	[737]
30	food supply/	[15980]
31	(food adj2 (secur* or insecur* or supply or supplies)).mp.	[36782]
32	10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31	[428193]
33	9 and 32	[652]

Appendix Figure 6-1: Search strategy for Ovid (MEDLINE)

EBSCO (CINHAL)

1. ((MH "Marriage")) AND ((MH "Child"))
2. TI ((child* N2 (marriage* or married or bride* or groom*))) OR AB ((child* N2 (marriage* or married or bride* or groom*)))
3. TI ((adolescen* N2 (marriage* or married or bride* or groom*)).) OR AB ((adolescen* N2 (marriage* or married or bride* or groom*)).)
4. TI ((teen* N2 (marriage* or married or bride* or groom*))) OR AB ((teen* N2 (marriage* or married or bride* or groom*)))
5. TI ((early* N2 (marriage* or married or bride* or groom*))) OR AB ((early* N2 (marriage* or married or bride* or groom*)))
6. TI ((young* N2 (marriage* or married or bride* or groom*))) OR AB ((young* N2 (marriage* or married or bride* or groom*)))
7. TI ((youth* N2 (marriage* or married or bride* or groom*))) OR AB ((youth* N2 (marriage* or married or bride* or groom*))
8. TI (((boy* or girl*) N2 (marriage* or married or bride* or groom*))) OR AB (((boy* or girl*) N2 (marriage* or married or bride* or groom*))
9. S1 OR S2 OR S3 OR S4 OR S5 OR S6 OR S7 OR S8
10. (MH "Refugees")
11. TI disaster victims OR AB disaster victims
12. (MH "Refugee Camps")
13. TI Refugee* OR AB Refugee*
14. TI ((displace* N1 (people or person*))) OR AB ((displace* N1 (people or person*)))
15. (MH "War Crimes")
16. (MH "War")
17. TI conflict* OR AB conflict*
18. (MH "Disasters") OR (MH "Natural Disasters")
19. TI disaster* OR AB disaster*
20. TI ((drought* or famine* or flood* or earthquake* or wildfire* or "tidal wave*" or tsunami*)) OR AB ((drought* or famine* or flood* or earthquake* or wildfire* or "tidal wave*" or tsunami*))
21. TI humanitarian settings OR AB humanitarian settings
22. TI "extreme event*" OR AB "extreme event*"
23. TI persecut*. OR AB persecut*.
24. TI genocide OR AB genocide
25. (MH "Food Security")
26. TI food insecurity OR AB food insecurity
27. TI food supply OR AB food supply
28. (MH "Food Supply")
29. TI ((food N2 (secur* or insecur* or supply or supplies))) OR AB (food N2 (secur* or insecur* or supply or supplies)))
30. S10 OR S11 OR S12 OR S13 OR S14 OR S15 OR S16 OR S17 OR S18 OR S19 OR S20 OR S21 OR S22 OR S23 OR S24 OR S25 OR S26 OR S27 OR S28 OR S29
31. S9 AND S30

Appendix Figure 6-2: Search strategy for CINHAL

EBSCO (PsycInfo)

1. TI ((child* N2 (marriage* or married or bride* or groom*))) OR AB ((child* N2 (marriage* or married or bride* or groom*)))
2. TI ((adolescen* N2 (marriage* or married or bride* or groom*)).) OR AB ((adolescen* N2 (marriage* or married or bride* or groom*)).)
3. TI ((teen* N2 (marriage* or married or bride* or groom*))) OR AB ((teen* N2 (marriage* or married or bride* or groom*)))
4. TI ((early* N2 (marriage* or married or bride* or groom*))) OR AB ((early* N2 (marriage* or married or bride* or groom*)))
5. TI ((young* N2 (marriage* or married or bride* or groom*))) OR AB ((young* N2 (marriage* or married or bride* or groom*)))
6. TI ((youth* N2 (marriage* or married or bride* or groom*))) OR AB ((youth* N2 (marriage* or married or bride* or groom*))
7. TI (((boy* or girl*) N2 (marriage* or married or bride* or groom*))) OR AB (((boy* or girl*) N2 (marriage* or married or bride* or groom*))
8. S1 OR S2 OR S3 OR S4 OR S5 OR S6 OR S7
9. TI disaster victims OR AB disaster victims
10. TI Refugee* OR AB Refugee*
11. TI Refugee camps OR AB Refugee camps
12. TI ((displace* N1 (people or person*))) OR AB ((displace* N1 (people or person*)))
13. TI conflict* OR AB conflict*
14. TI armed conflict* OR AB armed conflict*
15. TI disaster* OR AB disaster*
16. TI natural disaster* OR AB natural disaster*
17. TI ((drought* or famine* or flood* or earthquake* or wildfire* or "tidal wave*" or tsunami*)) OR AB ((drought* or famine* or flood* or earthquake* or wildfire* or "tidal wave*" or tsunami*))
18. TI humanitarian settings OR AB humanitarian settings
19. TI "extreme event*" OR AB "extreme event*"
20. TI persecut*. OR AB persecut*.
21. TI genocide OR AB genocide
22. TI food insecurity OR AB food insecurity
23. TI food supply OR AB food supply
24. TI ((food N2 (secur* or insecur* or supply or supplies))) OR AB (food N2 (secur* or insecur* or supply or supplies)))
25. S9 OR S10 OR S11 OR S12 OR S13 OR S14 OR S15 OR S16 OR S17 OR S18 OR S19 OR S20 OR S21 OR S22 OR S23 OR S24
26. S8 AND S25 (302)

Appendix Figure 6-3: Search strategy for PsycInfo

Web of Science

1. (child* NEAR/2 (marriage* or married or bride* or groom*)) (Topic)
2. (adolescen* NEAR/2 (marriage* or married or bride* or groom*)) (Topic)
3. (teen* NEAR/2 (marriage* or married or bride* or groom*)) (Topic)
4. (early* NEAR/2 (marriage* or married or bride* or groom*)) (Topic)
5. (young* NEAR/2 (marriage* or married or bride* or groom)) (Topic)
6. (youth* NEAR/2 (marriage* or married or bride* or groom*)) (Topic)
7. ((boy* or girl*) NEAR/2 (marriage* or married or bride* or groom*)) (Topic)
8. #1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7 OR
9. refugee* (Topic)
10. (displace* NEAR/1 (people or person*)) (Topic)
11. conflict* (Topic)
12. disaster*. (Topic)
13. (drought* or famine* or flood* or earthquake* or wildfire* or "tidal wave*" or tsunami*) (Topic)
14. humanitarian setting*(Topic)
15. "extreme event*" (Topic)
16. persecut* (Topic)
17. genocide (Topic)
18. (food NEAR/2 (secur* or insecur* or supply or supplies)) (Topic)
19. #9 OR #10 OR #11 OR #12 OR #13 OR #14 OR #15 OR #16 OR #17 OR #18
20. #8 AND #19 (586)

Appendix Figure 6 - 4: Search strategy for Web of Science

Part I: Mixed Methods Appraisal Tool (MMAT), version 2018

Category of study designs	Methodological quality criteria	Responses			
		Yes	No	Can't tell	Comments
Screening questions (for all types)	S1. Are there clear research questions?				
	S2. Do the collected data allow to address the research questions?				
	Further appraisal may not be feasible or appropriate when the answer is 'No' or 'Can't tell' to one or both screening questions.				
1. Qualitative	1.1. Is the qualitative approach appropriate to answer the research question?				
	1.2. Are the qualitative data collection methods adequate to address the research question?				
	1.3. Are the findings adequately derived from the data?				
	1.4. Is the interpretation of results sufficiently substantiated by data?				
	1.5. Is there coherence between qualitative data sources, collection, analysis and interpretation?				
2. Quantitative randomized controlled trials	2.1. Is randomization appropriately performed?				
	2.2. Are the groups comparable at baseline?				
	2.3. Are there complete outcome data?				
	2.4. Are outcome assessors blinded to the intervention provided?				
	2.5 Did the participants adhere to the assigned intervention?				
3. Quantitative non-randomized	3.1. Are the participants representative of the target population?				
	3.2. Are measurements appropriate regarding both the outcome and intervention (or exposure)?				
	3.3. Are there complete outcome data?				
	3.4. Are the confounders accounted for in the design and analysis?				
	3.5. During the study period, is the intervention administered (or exposure occurred) as intended?				
4. Quantitative descriptive	4.1. Is the sampling strategy relevant to address the research question?				
	4.2. Is the sample representative of the target population?				
	4.3. Are the measurements appropriate?				
	4.4. Is the risk of nonresponse bias low?				
	4.5. Is the statistical analysis appropriate to answer the research question?				
5. Mixed methods	5.1. Is there an adequate rationale for using a mixed methods design to address the research question?				
	5.2. Are the different components of the study effectively integrated to answer the research question?				
	5.3. Are the outputs of the integration of qualitative and quantitative components adequately interpreted?				
	5.4. Are divergences and inconsistencies between quantitative and qualitative results adequately addressed?				
	5.5. Do the different components of the study adhere to the quality criteria of each tradition of the methods involved?				

Appendix Figure 6 - 5: Screenshot of Mixed Methods Appraisal Tool (MMAT) criteria

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