Identifying health literacy interventions for everyday use in community pharmacy: a qualitative and consensus methodology study

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ABSTRACT

Background – Research has consistently shown that approximately 50% of patients do not take their prescribed medication correctly. A commonly overlooked factor in patient's lack of understanding of health information and medicine instructions is limited health literacy. Health literacy is the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions. Medication-literacy forms an important part of health literacy whereby, the patients make good decisions about medicines. Community pharmacists need to be not only knowledgeable in the concept of health literacy, but also effective in identifying those with limited health literacy skills and supporting medication-literacy by using health literacy interventions.

Aims - This study aimed to explore community pharmacists' awareness and knowledge of health literacy, develop and evaluate a training course then understand the usability of health literacy interventions within their everyday practice.

Methods- Phase One; semi-structured, face-to-face, audio-recorded interviews explored the perspectives of a purposive sample of community pharmacists on the apparent awareness and understanding about health literacy. Data was analysed using framework analysis approach. Phase Two employed a nominal group technique to gather a consensus on which health literacy interventions could be used in community pharmacies. Phase Three developed, delivered and evaluated a training session for community pharmacists in which they learnt about the concept of health literacy and health literacy interventions generated in Phase Two. Phase Four interviewed participants on the usability of the health literacy interventions in their day-to-day practice.

Results- Phase One interviewed 19 community pharmacists and produced 5 themes; confusion seen in patients visiting the pharmacy, recognising confusion in patients, community pharmacists' perception of patients likely to be confused, awareness and understanding of health literacy and desire to learn more about health literacy. Phase Two NGT consisted of a panel of 7 experts and generated 5 top ideas; It's OK to ask, Teach-Back, Simple Language, Chunk-and-Check and Pictures. In Phase Three, all 21 attendees were happy with the structure of the training session, with some minor adjustments to learning materials. Phase Four conducted 11 interviews and produced four themes; appeal of intervention, limitation, adaption and continue to use.

Discussion- finding from this study showed that community pharmacists see many of the factors that cause confusion in patients. However, community pharmacists' awareness and understanding of health literacy was inadequate. A NGT seems to be an efficient technique to gather specific ideas about different interventions that could be used in community pharmacy. Teach-Back intervention seem to have the most impact on the participants. However, participants lack initial confidence in delivering Teach-Back. Chunk-and-Check and 'It's OK to ask' did not receive as much attention, by participants, as the other health literacy interventions.

Conclusions All community pharmacists and pharmacy teams who interact with patients could benefit from being trained in the concept of health literacy and how to use health literacy interventions. The findings of this study will be used to inform and refine the pharmacy-specific health literacy education programme so community pharmacists can start to understand and help patients with limited health literacy. The health literacy interventions used in the study were all suitable for further roll out into community pharmacies.

ACKNOWLEDGEMENTS

PRESENTATIONS RESULTING FROM THIS

WORK

Oral presentations resulting from this work

Building Health Literacy in the Community Pharmacy
4th Annual Stoke-on-Trent health literacy Learning Event
Stoke on Trent
27th June 2017

Building Health Literacy in the Community Pharmacy
5thHealth Literacy UK Conference
Belfast, Northern Ireland
16th February 2018

Training sessions delivered resulting from this work

Health Literacy and the Community Pharmacist
South Staffordshire LPC pharmacy contractors (22 attendees)
13th June 2018
Burton-upon-Trent

Health Literacy and the Community Pharmacist
Dean & Smedley community pharmacies (37 attendees)
17th September 2018

Health Literacy and the Community Pharmacist
South Staffordshire LPC pharmacy contractors (26 attendees)
23rd October 2018
Burton-upon-Trent

Health Literacy and the Community Pharmacist
Shropshire LPC pharmacy contractors (10 attendees)
14th November 2018

STRUCTURE OF THESIS

The diagram below outlines the structure of the thesis

CHAPTER ONE – INTRODUCTION

Provides background on health literacy and overview of community pharmacists in relation to medication-literacy. The chapter gives reasons for the study

CHAPTER TWO – NARRATIVE SYNTHESIS

This chapter provides a review and narrative synthesis of existing literature of the pharmacy professionals knowledge and awareness of health literacy and usability of health literacy interventions

CHAPTER THREE – METHODOLOGY

Aims and objectives of the study are outlined along with the methodological foundations for the thesis. The metaphor of the 'research onion' and how this metaphor can be used is discussed. The chapter will also discuss the ontological, epistemological and reflexivity considerations guiding the development of the research.

CHAPTER FOUR – METHODS

The chapter describes the approach towards participant sampling, recruitment, data collection and data analysis for all four phases

CHAPTERS FIVE TO EIGHT – RESULTS

These chapters report on the finding for each phase of the study.

CHAPTER NINE - DISCUSSION

This chapter forms the discussion and is divided into a discussion in line with the objectives, discussion in line with the literature, implications for pharmacists, strengths and limitations and then finally, conclusions

ABBREVIATIONS

AAMW - Ask about medicines week

AHRQ- Agency for Health Care Research and Quality

ALLS - Adult literacy and life skill survey

APP - All Practising Pharmacists

CASP - Critical Appraisal Skills Programme's

CCG - Clinical commissioning Groups

CHLF - Community Health and Learning Foundation

CPD - continuing professional development

DH - Department of Health

F-K - Flesch-Kincaid

GP - General Practitioner

HCPs – healthcare professionals

HLS-EU - European Health Survey

IOM - Institute of Medicine

LA - Local Authorities

LPC - Local Pharmaceutical Committee

LTC - Long Term Conditions

MDI - metered-dose inhaler

MOE - Ministry of Education

MURs - medicines use reviews

NGT - Nominal Group Technique

NHS - National Health Service

NHSE – National Health Service England

NLT - National Literacy Trust

NVS - Newest Vital Sign

OTC – Over-the-Counter

OCTVH - Oxford Centre for Triple Value Healthcare Ltd

PHE - Public Health England

PILs - patient information leaflets

PRISMA - Preferred Reporting Items for Systematic Reviews and Meta-Analyses

QA - Questionnaire

QARI - Qualitative Assessment and Review Instrument

RCT- -Randomised Controlled Trial

SES - Socioeconomic Status

SMOG - Simple Measure of Gobbledygook

S-TOFHLA - Short-Form Test of Functional Health Literacy

TIAs - Transient Ischemic Attacks

UK – United Kingdom

UMS - Universal Medication Schedule

USA - United States of America

USP - United States Pharmacopeia

WHO - World Health Organisation

CHAPTER 1: INTRODUCTION

Chapter Overview

The focus of this study was to firstly, explore community pharmacists' awareness and understanding of health literacy and secondly, understand the usability of health literacy interventions in the community pharmacy setting. With this in mind, this chapter gives a brief introduction before discussing health literacy in relation to general literacy, limited health literacy and its implications, medication-literacy, prevalence and populations affected. The chapter then provides an overview of the community pharmacists and their role as healthcare professionals in health literacy and medication-literacy, along with health literacy interventions that can be used to support patients in taking medicines safely and effectively. Finally, the chapter gives an insight as to why I am interested in the topic of health literacy in community pharmacy and reasons for this study.

1.1 Introduction

......a middle aged, well dressed, female enters the community pharmacy to collect the first prescription for her newly diagnosed diabetes. Once home, she looks at the box of tablets; 'take one three times a day' and wonders to herself how and when should she take them. Would it be with breakfast, lunch and tea or does she save one to have at bedtime? She thinks about ringing the pharmacist or doctor but feels silly – "how can a reasonably educated person not understand three times a day" she says to herself. She then notices more instructions cramped at the bottom of the label; 'take on an empty stomach' - "now I am really confused".....

It goes without saying, perhaps, that patients must be able to understand how to take or use medicines they have been given before they can adhere to their medicines. Every day many patients do not take their medicines correctly[1]. For example, some patients take too many, some take too little, others use devices incorrectly, such as inhalers. Compliance and adherence rates internationally vary widely across different disorders and studies however, approximately 50% or more of patients on prolonged treatment for medical illnesses, either do not take medications properly, or completely stop taking them[2]. Even when non-adherence has potentially serious consequences such as organ rejection, vision impairment and limb amputation, medicine adherence in patients still remains low[3]. Whilst some of these actions can be explained as a deliberate intention from the patient, in many instances it is the result of not understanding the instructions, whether verbal or written, given to them by healthcare professionals. Most medicines depend on a good understanding by the patients on how to take them safely and effectively, and yet Kuter and colleagues[4] hold the view that relatively few people are proficient in understanding and acting on available health information to fully engage in their own care. It is almost certain that a commonly overlooked factor in patients' lack of understanding of health information and medicine instructions is the result of limited health literacy.

When talking about literacy in the context of health, it is known as health literacy. Health literacy is commonly defined as, "The degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions"[5]. It could be argued that medication-literacy forms an important part of health literacy whereby, the patients are able to make good decisions about medicines to use them safely and effectively. As there are no official definitions of medication-literacy in the literature, for the purposes of this thesis I have defined medication literacy as 'An

individual's ability to obtain, evaluate, comprehend, calculate (where appropriate) and properly act upon patient-specific information regarding medication and their accompanied information, necessary to make appropriate medication-related decisions, regardless of the mode of content delivery such as written, oral, visual images and symbols).

Health literacy is a stronger indicator of an individual's health status than usual health predictors such as age, ethnicity, and socioeconomic status[6] (SES). Thus, when individuals are health-literate, they tend to have a better understanding of health, healthcare and treatments; they are likely to live longer, have healthier lives; and require fewer healthcare interactions and resources. Studies in the field of health literacy have shown that poor or limited health literacy is extremely prevalent and a serious problem[7-10]. A number of researchers have reported that limited health literacy is a major cause of the inability of patients to take medications correctly[7,8,11-15].

1.2 General Literacy, Health Literacy and Education

Some scholars[16-18] use the term 'literacy' and 'health literacy' interchangeably, which can be confusing for those new to the field of health literacy. What is more, there is unquestionable and well documented relationships between good literacy and good health literacy[19-21]. However, the same reviewed literature cannot be said for the opposite relationship where good health literacy means good literacy. Thereby, implying literacy provides a basis upon which health literacy is acquired[22]. Thus, it is important to distinguish between general literacy and health literacy. The World Health Organisation (WHO) defines general literacy as the ability to read, write, compute and solve problems at a level of proficiency,

necessary to function in society, so as to achieve one's goals, and develop one's knowledge and potential[23]. The National Literacy Trust (NLT)[24], also includes reference to not only reading and writing but also speaking and listening: 'literacy is the ability to read, write, speak and listen well. A literate person is able to communicate effectively with others and to understand written information'[24]. Many definitions of literacy focus on the ability to read and write at an appropriate level for example, Blake (p.89)[25] states 'The attribute of literacy is generally recognised as one of the key educational objectives of compulsory schooling. It refers to the ability to read and write to an appropriate level of fluency.' There is, however, no commonly accepted definition of what 'an appropriate level', 'effectively' or 'well' mean.

From these definitions of general literacy, we can make comparisons with health literacy where health literacy is a person's capacity to independently find, understand, and use basic health information and services needed to make appropriate health decisions. In essence, both terms (general literacy and health literacy) relate to individual's ability to obtain, understand and apply this information to real-life situations. As with health literacy, general literacy can be improved upon with education and increased exposure. However, there are differences in that health literacy goes beyond general literacy and specifically refers to obtaining, processing, and applying health information whereas, general literacy is broader, as it is not limited to health. Overall, while general literacy and health literacy both share common characteristics, health literacy is more specific and is a term used in the healthcare world.

The ability to read with comprehension is fundamental in any environment however, the healthcare environment, due to its complex nature, tends to increase the amount of literacy needed from a person[26]. Thus, people who can

read and write may still be at a disadvantage in the healthcare environment[27] and so the number of years of education completed is usually not a valid guide of one's health literacy status. Studies have shown that even individuals with high literacy can still have difficulty in interpreting and acting on health information[28]. This is because reading and comprehension varies with an individual's knowledge with the content of the text, for that reason, health literacy is more predictive of healthcare use, health risk behaviours, and health outcomes than the level of general literacy[29]. When an individual has inadequate or limited health literacy it can therefore lead to issues or implications to those health outcomes. We will now look at the implications of limited health literacy.

1.3 Limited Health Literacy and the Implications

It is critical that healthcare professions understand the empirical research that demonstrates the link between health literacy and health outcomes, and that patients accessing healthcare are often faced with complex information, treatment decisions and instructions, in order to design effective health literacy interventions. At an individual level, health literacy requires a complex group of reading, listening, analytical, and decision-making skills, and then the ability to apply these skills to healthcare situations. For example, the capacity to comprehend instructions on medicines bottles and boxes, appointment letters, patient information leaflets (PILs), doctors' and pharmacists' instructions and the ability to navigate complex healthcare systems. Health literacy also includes numeracy skills, for example, calculating blood sugar levels for diabetes and measuring liquid medications, all require calculations skills. Moreover, health literacy requires individuals to have a basic understanding of how the body

works, and thus, people with limited health literacy often lack knowledge or have misinformation about the body, as well as the nature and causes of disease[30].

Limited health literacy happens when an individual's literacy and numeracy skills are poorly matched with the often technical, complex, and unfamiliar information that healthcare professionals and organisations make available. A large and growing body of literature has investigated increasing concerns that limited health literacy occurs when health services are too complex and difficult to understand and use effectively. McCaffery[31] supports this by highlighting that limited health literacy hinders the patient's ability to navigate the healthcare system and inhibits confident interaction with healthcare professionals. Therefore, given the complex nature of healthcare systems and health information, it is not surprising that incidences of limited health literacy might emerge, which are associated with poor health[5].

A critical body of research has investigated the causal relationship of health literacy to a variety of health outcomes and has paid particular attention to limited health literacy and its effects on many types of health conditions, diseases, situations, and outcomes, including health status, medicines and costs. Research has consistently shown the relationship between limited health literacy and worse health outcomes. For example, a number of studies have established that higher rates of hospitalisation[32,33] and use of emergency services[34], along with nearly two-fold higher mortality rates [33,35] are seen in patients with limited health literacy, compared to those with adequate health literacy skills. Evidence also suggests that individuals with limited health literacy skills are more likely to have chronic conditions, are unable to manage their situation effectively[30] as well as visiting the physician more often[36]. Other studies have also reported that patients with limited health literacy who are suffering from high blood pressure, diabetes,

asthma or HIV/AIDS often have minimal health knowledge and information regarding the management of their illness, including how to take their medicines[37]. This may result in the worsening of their current state of health, or even death. Patients with limited health literacy have also been reported as having poor adherence to their treatment plans[38]. Many of these trends pave the way to further research to investigate the true costs to the United Kingdom (UK) healthcare system.

A considerable amount of literature has also been published on health literacy in relation to public health. Sudore and Schillinger[39] illustrated that limited health literacy can affect patients' uptake of prevention and screening services. This is another key aspect of limited health literacy where patients avoid preventive measures, thereby entering the healthcare system with deteriorating health, which sometimes may be incurable and lead to permanent, irreversible conditions, or even death. It has also been suggested that limited health literacy is associated with unhealthy lifestyle behaviours, such as, smoking, drinking, insufficient exercise and fruit and vegetable consumption, all which may lead to the risks of premature morbidity and mortality[40]. According to European Health Survey (HLS-EU)[41], the extent of physical exercise that people undertake is consistently and strongly associated with health literacy. Also, good childhood health literacy has been found to be positively related to a healthier diet. The study conducted by Sudore and Schillinger[39], shows that young people with good health literacy are more likely to be aware of food nutritional practices. A summary of health literacy effects on health is shown in Table 1.

As mentioned in section 1.1, medication-literacy forms an important part of health literacy whereby, the patients are able to make good decisions about medicines to use them safely and effectively. Therefore, patients with limited health literacy

may have difficulty understanding medicines and their instructions. This is now discussed in the following section.

Table 1. Health Effects of Health literacy

LIMITED HEALTH LITERACY	ADEQUATE HEALTH LITERACY
➢ Less knowledge about the illness and its management. ➢ Inability to locate information related to disease-prevention ➢ Decreased ability to understand medical information ➢ Higher likelihood of not asking for clarification because of feelings of shame and embarrassment Decreased ability for self-management ➢ Less likely to take part in health decision-making ➢ Higher likelihood of medication errors and misreading prescription drug labels ➢ Reduced rate of compliance with treatment recommendations ➢ Higher likelihood of hospitalization ➢ Increased burden on the healthcare system	➢ Increased awareness of factors related to health ➢ More advocacy and social action ➢ Increased disease prevention ➢ Enhanced ability to access health-related information and utilize services ➢ Clearer communication with healthcare providers ➢ Greater probability of compliance with practitioners' recommendations ➢ Better disease management ➢ Improved health status ➢ Reduced probability of hospitalization Reduced health disparities and barriers to health promotion ➢ Reduced burden on the healthcare system

1.4 Medication-Literacy

Medicines are widely used, not only to relieve symptoms and cure conditions, but to prevent ill health in the future. However, research has consistently shown that approximately 50% of patients do not take their prescribed medication correctly[42]. A major area of interest relating to this is that it can result to between 11% and 30% of drug related hospital admissions[42,43]. Medicine-taking is a complex human

behaviour, and the patient's involvement and adherence are central to medicine taking. Adherence is defined as 'the extent to which the patient's behaviour matches agreed recommendations from the prescriber'[44] . However, despite many healthcare professionals sophisticated efforts to encourage safe medication use, current strategies have been insufficient and ineffective, especially for patients with limited health literacy. Figure 1 depicts the maze of medication information[45] that patients are expected to navigate and several of the barriers that patients with limited health literacy may encounter.

Figure 1. Medication Information Maze
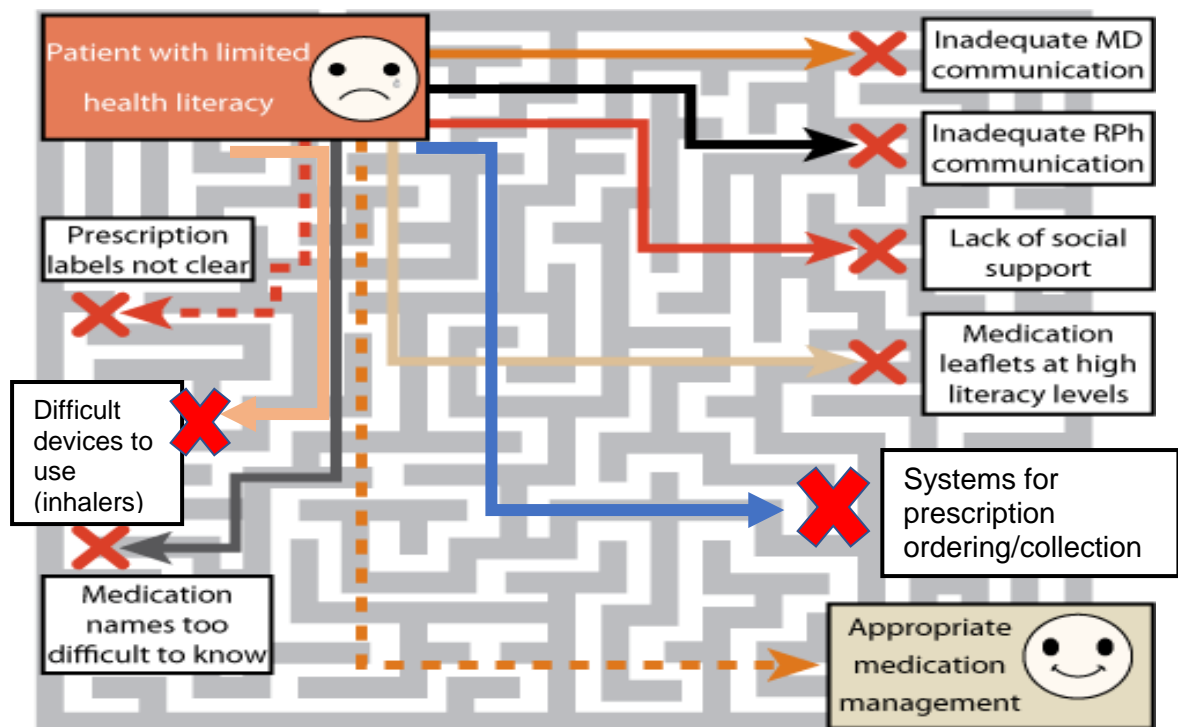
MD = medical Doctor, RPh = registered pharmacist
Adapted from Bazaldua, Oralia V., et al.. Health Literacy and Medication Use[45]

Previous studies have provided useful pointers to indicate that patients' health literacy has a significant impact on the extent of their medication adherence[13-15] especially due to poor medication-literacy, such as not adequately reading, understanding and comprehending medicine-related information[12,46]. For

example, in 2006 Wolf published a paper reporting that only 23% of 252 primary care adult patients having ever looked at the accompanying patient information guides, with patients of lower health literacy levels less likely to have looked compared to those with adequate health literacy levels (16.7% vs 32.9%)[47]. Authors of the study questions whether patient medication guides were useful to patients with limited health literacy skills, because of the guides complex understanding needs mismatches the skills of a limited health literacy individual. Another study by Maniaci et al[48], studied relatively well-educated patients after being given at least one new medicine while in hospital. When telephoned at home 1–2 weeks later, 14% did not know they had been given a new medicine and 36% did not know the name of that medicine or its purpose, concluding that even patients with adequate health literacy struggle to understand their medicines.

In recent years, there has been an increasing amount of literature relating medication-literacy to poor medicine labels and whether they are understood by patients. In an United States of America (USA) study, Williams and colleagues established that 42% of patients did not understand simple instructions on tablet bottles, such as 'take on an empty stomach'[12]. Similarly, in Wolf's study, he demonstrated that 46% of 395 patients misinterpreted at least one instruction on medicine labels[49]. Another US study[37], found that patients with limited health literacy were three times more likely to misinterpret warning instructions from labels, than patients with adequate health literacy. One limitation of much of this literature is that patients were asked to look at labels and medicines they were unfamiliar with and thus, it could be argued that they would not understand the instructions. However, in Schillinger's[50] important study, he examined a group of patients that used their own, familiar medicines and labels and was able to show that one third of participants were still unable to follow the label instructions.

Patients with limited health literacy may also be less likely to identify or distinguish their medicines from one another[51]. Presell and colleagues[52] assessed the relationship between health literacy and adults ability to recall their medication names by measuring health literacy using a Short-Form Test of Functional Health Literacy (S-TOFHLA) in US health centre. Patients were asked about the medicines they took for blood pressure and only 40.5% of patients with limited health literacy were able to name any of their antihypertensive medicines, compared to 68.3% of those with adequate health literacy. Kripalani[51] supported this in his study, demonstrating that patients with inadequate literacy skills had 10 to 18 times the odds of being unable to identify all of their medications, compared with those with adequate literacy skills.

Lastly, an increasingly important area is being applied to patients with long term conditions (LTC) and their increased risk for poor medication-literacy. To illustrate this, a study by Williams[53] determined the relationship of literacy to asthma knowledge and ability to use a metered-dose inhaler (MDI). Researchers concluded that inadequate health literacy was strongly correlated with improper MDI use compared with patients with adequate health literacy, more patients with inadequate health literacy were unable to demonstrate proper MDI use (88% vs. 48%)[53].

One major drawback of many of the studies are that they were undertaken in the USA, thus, the findings may not be generalisable to other countries. For example, the UK National Health Service (NHS) provides free treatment in contrast to the USA system, where higher health literacy levels may be required, as the system operates around health insurance, requiring patients to engage with funding application forms[54]. However, in the case of the UK, studies have also reported

findings demonstrating large proportions of the adult population were unable to understand basic instructions on medicine labels[55,56]. These studies also suggest there is the potential for poor medicine adherence in patients with limited health literacy, and patients' poor medication-literacy due to misunderstanding of medicines information and instructions, whether verbal or written, could lead to them not taking their medicines safely and effectively.

So far, we have discussed the concept of health literacy and limited health literacy and its implications for health outcomes and medicine-taking. We will now look at the prevalence of limited health literacy.

1.5 Prevalence

A key aspect of health literacy is the prevalence of limited health literacy. Pleasant[57] mapped the number of peer-reviewed articles in 2011 which clearly indicated that limited health literacy has increasing impact around the world. Previous reports, in the developed world alone, have estimated that 100 million people are functionally illiterate[58]. This worldwide prevalence of limited health literacy has raised the question with authors that inadequate or limited health literacy is a silent epidemic[26,35,59]. Parker and colleagues[26] also forecast future trends in health literacy, suggesting that limited health literacy problems will be exacerbated, suggesting that this could be due to factors, such as the aging population and the incline of chronic long-term conditions, along with increasing complexities of healthcare systems.

In the US, it has been reported that half of all adults have limited literacy skills[19]. In addition, Rudd[60] reported 46% of the adult population in the US has restricted

health literacy proficiencies and Kutner[4] stated that one in three American adults has difficulty understanding and acting on health information. In Canada, 60% of the adult population reported the lack of skills to manage their health literacy needs[61]. Similar results were shown in New Zealand which reported that 56.2% of adults had poor literacy skills, scoring below the minimum level required to meet the demands of everyday life and work[62]. Further, Adult literacy and Life Skill survey (ALLS) focused on the literacy of adults in Australia which showed 40% of adults had low health literacy skills[63]. According to the HLS-EU[41] conducted from 2009-2012 by the European Health Literacy Consortium with the aim to explore health literacy in Europe indicated that virtually every second respondent suffered from limited health literacy.

From the UK viewpoint, no nationally representative estimate for the overall population prevalence of limited health literacy exists. However, the Skills for Life Survey in 2011[64], reported that only 56.6% of the adult population aged 16-65 years achieved a level 2 or above score in literacy, which is equivalent to an English GCSE at grades A*-C. (See Figure 2 for education levels and further information in appendix 1). In addition, 28.5% of the respondents, achieved literacy level 1 which is equivalent to an English GCSE at grades D-G, while the rest of the respondents (14.9%) achieved entry level 3 and below (entry levels being the lowest). With regards to numeracy skills data, 76% of respondents achieved an entry level 3 scores or above in numeracy, with 24% achieving an entry level 2 score or below. These adults would not be able to pass an English GCSE and would have literacy levels at or below what is expected of an 11-year-old, and therefore are considered 'functionally illiterate'. In addition, an important study by Rowlands and Protheroe in 2015[65] examined the mismatch between the skills of the English working-age population and available health materials, and suggested that 42% of working adults (between the ages of 16-65 years) were

unable to comprehend and make use of daily health information. The study also found that 61% of the population were unable to understand and make use of everyday health information when numeracy skills are required, indicating that working adults would struggle to know how to compute a childhood paracetamol dose. Similarly, health literacy prevalence was also addressed by Community Health and Learning Foundation (CHLF)[66] in which they used the figures from the Rowlands and Protheroe in 2015[65] study to estimate 15-21 million people in the UK might be lacking the necessary skills for living a healthy life such as knowledge, understanding and confidence to access, understand, evaluate, use and navigate health and social care information and services.

Figure 2. Education Levels

entry level		level 1		level 2		level 3		level 4/5		post-graduate
•skills for life •adult numberacy and literacy •equivalent to literacy levels at age 5-11		•NVQ 1 •GCSE grrade E-G •key skills level 1		•NVQ 2 •BTEC Firsts •GCSE grade A* - D •key skills level 2		•NVQ 3 •BTEC National cert/diploma •key skills level 3		•NVQ 4 •BTEC HNCD •professional cert/Dip;oma •Key Skill level 4		•Masters •Doctorate
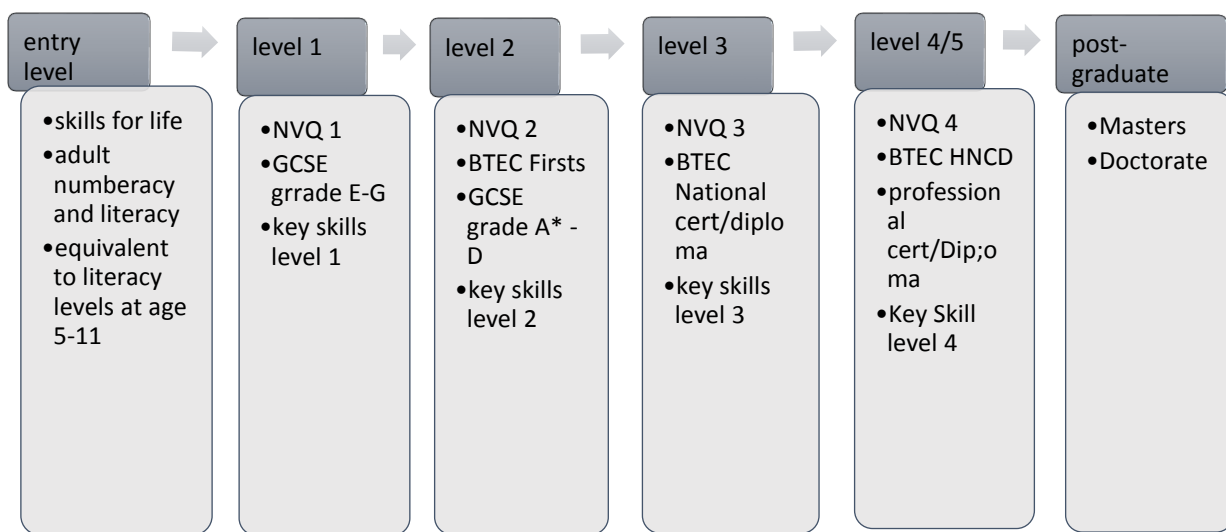
It is now important to understand which populations of people may be affected by limited health literacy. The next section will discuss this topic in some depth.

1.6 Populations Affected

While it is not possible to recognise if someone has limited health literacy simply by looking at or talking to them, there is growing recognition that some population subgroups are particularly vulnerable to receiving suboptimal healthcare and achieving poorer health outcomes, compared with the general population. This vulnerability may be dependent on many factors to which the individual is subjected. In other words, many things contribute to one's limited health literacy, including:

- age, race or ethnicity
- financial circumstances or place of residence
- health, functional, or developmental status
- ability to communicate effectively

Taking age as an example, evidence suggests that the elderly population is at greater risk when it comes to poor health literacy. Studies show, older adults aged 65 years plus are four times more likely to experience limited health literacy than the general population[40] for several reasons, including: reduced level of mental processing occasioned as a result of advancing age, disability and illness, an exhibition of more long-term health conditions and less participation in formal education, compared to other young, upcoming generations. Moreover, the use of technology, (especially the computer and internet) is lower among older people, compared to the entire population. This is likely to disadvantage the older generation, since health communication and health services are increasingly shifting to be delivered more through digital platforms. Hence, this has a direct impact on the ability of older people to manage their health through the evolving healthcare system[66].

Evidence also indicates that some ethnic minority groups have lower health literacy levels, compared to the rest of the population. The underlying reasons for

low health literacy levels and poor health outcomes among this group of people is attributed to the greater difficulty in accessing, understanding and implementing health information compared to the larger population[67]. The patient's ability to comprehend what medicines are being prescribed is essential, to ensure safe and effective use of their medicines and prevent any misunderstandings. Language and thus, medication-literacy for example can be a major obstacle for people from minority groups. This is supported by a report from Public Health England (PHE) published in 2007[68], which indicated that 41% of people who use English as their second language may receive no interpretation support when visiting a GP or Health Centre. Therefore, the lack of access to health information could be a leading contribution to risky behaviour, unsuitable use of health services and generally poor health among individuals, in this population group.

Individuals from an underprivileged background and lower education are recognised to experience a lower disability-free life, and die, prematurely. Although health literacy levels are a concern for all people, the rates of limited health literacy levels have been shown to be higher among adults with low income and educational status. Additionally, the social backgrounds of an individual have a lot of influence on the level of education and skills, and even on the health outcomes[35]. According to the PHE report health literacy programs in Europe may not be adequately addressing the issues of the underprivileged people from disadvantaged, economic groups. Social determinants and health literacy are not well covered in health literacy research.

More recently, literature has emerged addressing possible reasons for why people from underprivileged backgrounds are more vulnerable to limited health literacy. The literature shows that people from these groups are less likely to acquire information or assistance for their health problems compared to more

privileged individuals, and thus, hindering them from becoming health literate[64].

Patients from disadvantaged social economic backgrounds are also less likely to access patient-centred care and may be more prone to morbidity and mortality[69]. For instance, a study conducted by the Skills for Life Survey[64] demonstrated that individuals with low adult literacy and numeracy skills appear to have disproportionately health limiting conditions, which might cause deteriorating self-rated health.

Social determinants such as ethnicity, gender, disability, and sexual orientation combine and interconnect to affect health and wellbeing, often varying across the life-course. Health inequalities are often observed along a social gradient meaning that the more favourable socioeconomic position, such as income or education, the better chance of enjoying better health and a longer life. Whilst it is generally accepted that individuals with limited health literacy have poorer health outcomes and poorer use of health services[7], the relationship between health literacy and health inequalities is unclear[70]. However, the HLS-EU[41] found that health literacy is correlated with age, employment status, social status, financial deprivation and education. Limited health literacy follows a social gradient and can further reinforce existing inequalities.

The HLS-EU[41] also identified that income and perceived social class were the only two variables which positively predicted health literacy, and these variables have also been linked to health inequalities. Recent Irish[71] and Welsh[72] reports have suggested that health literacy is undoubtedly related to markers of social gradient, such as income and education. However, it was also clear from reports that those with higher incomes and more education are still at risk of limited health literacy, as they may be unable to evaluate competently the considerable and sometimes inconsistent information needed to manage or improve their

health status[72,73]. More research is needed, particularly on health disparities and inequalities, to address the interrelationships between limited health literacy and cultural and socioeconomic factors.

Stoke-on-Trent, a setting for this present study, is characterised by high levels of deprivation and is currently ranked the 14th most deprived local authority (out of 326) in England[74]. Nearly 133,000 people (over half the population) live in areas classified as being among the top 20% most deprived in England[74]. The health of people in Stoke-on-Trent is generally worse than the England average[74]. Life expectancy at birth for both men and women is lower than the England average, as are levels of healthy life expectancy. Premature mortality (deaths under the age of 75) from the three major killers – cancer, circulatory disease, respiratory disease – are all significantly higher compared with England. In regards to local health inequalities, life expectancy is 9.8 years lower for men and 6.9 years lower for women living in the most deprived areas of Stoke-on-Trent than in the least deprived areas[74]. These differences are reflected in higher premature mortality rates (from all causes) among men and women living in the most deprived areas of the city. In regards to some of the key social determinants of health – child poverty, fuel poverty, school readiness, educational attainment, homelessness, employment and unemployment – outcomes in Stoke-on-Trent are significantly worse compared with England. It has also been suggested that Stoke-on-Trent has 18.3% of adults with no formal education compared to the national average of 9.3%[74]. Another study found that 52% of the adult population of Stoke-on-Trent had inadequate health literacy[75].

Staffordshire, the wider setting for the present study, as a whole is far less deprived than Stoke-on-Trent, although pockets of high levels of deprivation exist across the majority of the main towns[74] in the county such as Cannock, Lichfield

and areas of Newcastle-u-Lyme. The health of people in Staffordshire is varied compared with the England average. In regards to inequalities in health, life expectancy is 6.4 years lower for men and 6.4 years lower for women living in the most deprived areas of Staffordshire than in the least deprived areas[74]. As with Stoke-on-Trent, these inequalities are reflected in higher premature mortality rates (from all causes) among men and women in the most deprived areas of the county. Unlike Stoke-on-Trent, across a range of key social determinants of health, outcomes for Staffordshire as a whole are similar or better compared with England[74].

We have now discussed the implications of limited health literacy along with prevalence and populations of people that may be affected. We have also discussed the implications of poor medication-literacy. We will now look at ways healthcare professionals can help to support patients with limited health literacy, through health literacy interventions, to take their medicines safely and effectively.

1.7 Health Literacy Interventions

The National Action Plan to Improve Health Literacy from the US[76], outlines seven goals with related strategies to improve health literacy. One of these goals includes a focus on interventions that support patient's medication-literacy and are also a guide for healthcare professionals, including pharmacists, to help support patients becoming more health and medicine literate. Health literacy interventions range from simple interventions focused on a specific skill or knowledge domain to more complex interventions intended to address a multitude of behaviours, skills and abilities. Numerous studies have been

conducted on the effectiveness of these interventions however, far too little attention has been paid to community pharmacists in the UK in relation to using these health literacy interventions in their day-to-day practice. This next section describes some of these health literacy interventions that are significant to the field of health literacy and medication-literacy.

1.7.1 Teach-Back

Teach-Back is aimed at increasing patients' understanding of health information and medicine instructions being communicated by asking patients to repeat back key points of the instruction[77]. The Teach-Back method is used to confirm that the information healthcare professionals, such as community pharmacists, have provided has been understood, by getting patients to `Teach-Back' what has been discussed and what medicine instructions have been given. Based on this information, the community pharmacist can assess the match between their expectations and patients' understanding[77]. Schillinger and colleagues[78] called this the '*interactive communication loop'* and illustrated it as a diagram (Figure 3) stating that it is used for assessing recall and comprehension, and checks for lapses in recall and understanding thus, allowing the healthcare professional to uncover health beliefs, reinforce and tailor health messages, and activate patients by opening a dialogue, along with what key concepts have been understood and remembered.

It is recommended that the healthcare professional would use questions such as "can you just tell me how you are going to use that inhaler, so I know I have explained it correctly to you". Thus, Teach-Back is not a test of patient's knowledge as much as an exploration of how well the information has been taught and what needs to be clarified or reviewed[77]. Studies using Teach-Back

show how the importance of the method has been used as an educational strategy for healthcare professionals[79,80]. Furthermore, because Teach-Back does not require any particular level of literacy[77], it allows those patients with limited literacy levels to actively participate and for information to be reiterated.

Figure 3. The Interactive Communication Loop in Clinician-Patient Education.
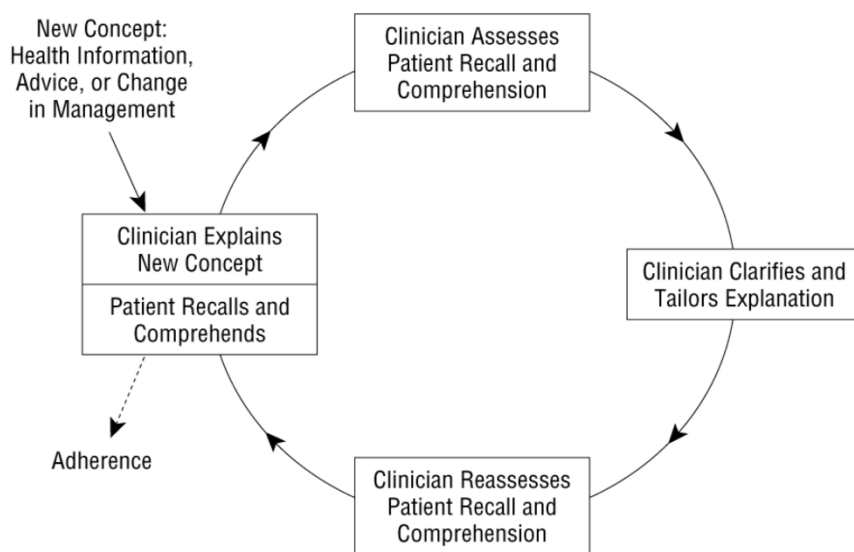
Taken from Schillinger D, et al. Closing the loop[78].

Most studies in the field of Teach-Back evaluations have only focused on the impact on the patient or client, including rates of hospital readmission[81,82], medication adherence[83], and informed consent[84,85]. A systematic review by Ha Dinh et al showed that when healthcare professionals employed Teach-Back, improvement was seen in self- care, hospital readmission and hospitalisation[86]. Despite widespread agreement on the benefits of Teach-Back, what is not yet clear is the healthcare professional's experience of using Teach-Back. Furthermore, there is no known research to date about the usability of Teach-Back in UK community pharmacies from the pharmacist's perspective.

1.7.2 Chunk-and-Check

Another health literacy intervention is known as Chunk-and-Check, which community pharmacists could use alongside other interventions such as Teach-Back, to assist in promoting patients understanding of their medicines. This method involves breaking down information, into small, manageable chunks, for the patient, rather than providing all information at once[87]. This method also enables patients to raise queries and ask questions of the community pharmacist, by stopping conversations at appropriate moments during the 'Check' stage. Again, no known studies have explored the use of the health literacy intervention in community pharmacies.

1.7.3 Simple Language

Healthcare communication can be often overwhelming to patients, as an array of jargon and acronyms are used regularly by healthcare professionals, which patients are unfamiliar with. One study,[88] assessed 125 hospitalized patients' comprehension of 50 of the most common health words found in transcripts of physician-patient interviews. While almost all (98%) understood the word "vomit," only 35% of patients understood the word "orally," only 22% understood "nerve," only 18% comprehended "malignant," and just 13% understood "terminal." Thus, Sudore and Schillinger[39] recommends that spoken communication must be clear and recommend that healthcare professionals slow down their speech and avoid medical jargon. Therefore, community pharmacists should use simple language when trying to explain things to patients. This is also a tactic recommended by health literacy experts as it generates opportunities for dialogue between the patient and healthcare professional[39,60,89,90]. The Centre for Disease Control's National Centre for Health Marketing established a thesaurus, which gives plain language suggestions for an array of healthcare and medical terminologies.

Some of the examples include, 'stop smoking' instead of 'smoking cessation', 'being sent to see someone else' instead of 'referral', among many others[91].

1.7.4 Ask-Me-3

Another Intervention that focuses on verbal communication is known as Ask-Me-3. Endorsed by the Agency for Health Care Research and Quality (AHRQ), Ask-Me-3 encourages patients and families to ask three specific questions of their healthcare professional, to better understand their health conditions, and what they need to do to stay healthy. The three questions; What is my main problem? What do I need to do? Why is it important for me to do this? are designed to improve communications between patients and healthcare professionals. Community pharmacists could give pre-printed cards to patients whilst they wait for their prescription to be dispensed, in order for them to think about the three simple questions they would like to ask of their community pharmacist.

Michalapoulou and colleagues[92] used Ask-Me-3 to evaluate if implementing made a difference in patients' perceptions of provider cultural competency and patient satisfaction. This small study (n=64) consisted of two groups, the intervention group who received Ask-Me-3 pamphlets prior to their visit with their provider and the control group who received no pamphlets. Almost all of the intervention group participants reported finding the pamphlets helpful, and everyone who actually asked all 3 questions found the questions to be helpful. About 90% of the intervention group reported knowing more about their condition after their visit[92]. Thus, the findings from this study illustrated the feasibility of using Ask-Me-3 and patient satisfaction. In addition, the study highlighted patient empowerment through improved communication techniques.

1.7.5 Readability Formulas

Readability is a measure used to describe the ease with which a passage of text can be read by an individual[93] and readability is a central component of health literacy as health information that is hard to read may inadvertently cause it to become inaccessible for people with low levels of health literacy[93]. Kong[94] found that the readability of online tracheostomy care resources was written at a level more difficult than the recommended 4th to 6th grade level for written health information. Similar results have been shown across multiple fields of medicine[94-98].

Readability formulae, such as the Flesch-Kincaid (F-K) grade formula[99] and the Simple Measure of Gobbledygook (SMOG) grade formula [100], are increasingly being advocated as a tool for assisting writers in preparing and designing written health information that is easily read by the majority of the population[101]. SMOG uses sentence complexity (number of words per sentence) and word complexity (number of words of 3 or more syllables) to give a readability score. Researcher Friedman[101] conducted a systematic review of readability instruments and indicated the advantages and disadvantages of each. SMOG had the advantages of first, being the most common used second, adopted by the National Cancer Institute, third, has additional versions available (conversion table and an online version), fourth, measures a larger sample (typically 600 words) than other instruments and finally, has a high correlation with other instruments.

Being able to measure the readability of a text with a simple formula is an attractive prospect. Readability formulae do, however, have disadvantages. Although the formulae vary, they generally view text narrowly whereby including only sentence length and word difficulty as factors, and thus, assume that longer words and longer sentences are harder for the reader to understand. Readability

formulae can not tell whether the words used are familiar to the reader or whether the sentences used are written clearly and cohesively. In essence then, readability formulae do not measure the degree of discourse cohesion, number of inferences required, number of items to remember, complexity of ideas, rhetorical structure, dialect, and background knowledge required[101,102]. Furthermore, readability formulae cannot reflect such reader-specific factors as motivation and interest in reading the text[102].

1.7.6 Visual Aids

For limited health literacy patients, the use of visual aids in conjunction with text can be used to enhance understanding written drug and health information. Visual aids or pictograms involve figures and concepts and can be used to transmit information in a clear, expeditious, and simple manner[102]. It has been shown that, in practice, visual aids can improve the usability and quality of written drug information[103-105] and patients are more likely to read, compared to text-only information[105].

With regards to medicines and adherence studies have been shown that the use of pictograms plays an important role in increasing the understanding and promoting adherence to prescribed medicines[102]. For example, Mansoor and colleagues'[106] study resulted in significant improvement in adherence to treatment in the short term when the information materials about the use of medications incorporated pictograms.

While pictograms are useful tools to reinforce both comprehension and recall of medicines-related information, attract attention and reduce misunderstandings regarding a drug treatment[103,104,105,], studies have shown that pictograms should not be used as the sole source of communication as certain studies have shown

that they convey insufficient detail for proper comprehension of medicine instructions[105], and so the use of pictograms should always be accompanied by training and verbal reinforcement by the healthcare professional. Furthermore, pictograms can vary in perception and interpretation by patients with languages differences and cultural backgrounds[105]. Awareness of poor comprehension and interpretations across cultures might help designers design effective universal pictograms.

1.8 Health Literacy and the Community Pharmacist

The community pharmacy is an important part of the system for delivering healthcare services in England. They are owned and operated by small independents, medium or large independents (more than one pharmacy), large chain multiples and in-store pharmacies within supermarkets. Pharmacy funding is very complex, through commissioning from Department of Health (DH), Clinical commissioning Groups (CCG), Local Authorities (LA) and National Health Service England (NHSE), many offer a range of services. These include prescription dispensing, advising on over-the-counter (OTC) medicines, answering questions about health and medicines from both patients and other healthcare professionals and signposting patients to other healthcare organisations. More recently, community pharmacists have taken on more of the clinical roles that have traditionally been undertaken by doctors, such as the management and monitoring of long-term conditions. For example, asthma and diabetes, as well as delivering flu vaccinations, and conducting medicines use reviews (MURs). Thus, the community pharmacist has a key role in providing patients with written and verbal information and signposting them to other services for health information.

We have discussed in previous sections the high prevalence of limited health literacy worldwide, along with the many populations of people that can be affected. Despite this, studies have shown that community pharmacists along with other healthcare professionals, remain unaware that their patients may have health literacy problems[107], with many underestimating patients health literacy needs[69]. Community pharmacists and other healthcare professionals may also not recognise the impact of limited health literacy on patients[108]. Thus, community pharmacists need to be not only knowledgeable in the concept of health literacy, but also effective in identifying those with limited health literacy skills and supporting medication-literacy.

Current literature pays particular attention to look the healthcare professional's role as to why some patients adhere and comply with their medicines and some patients do not. It has also focused on why some patients do not engage with shared-decision making with healthcare professionals and do not look after themselves, thereby, preventing ill health. Thus, a growing body of literature has started to explore the healthcare professional and how they build, support or even limit a patient's health literacy. From here, new understanding is emerging about the health literacy interventions that healthcare professionals can adopt and use with patients in order to build the patients' health literacy levels. Health literacy interventions were discussed earlier in this chapter.

Community pharmacists who have not had opportunities for health literacy training can unknowingly create barriers to even patients with adequate health literacy through ineffective communications, such as using terminology or medical jargon that is unfamiliar to patients, provision of instructions that are not clear; or allow inadequate time to check patient understanding or how they intend to enact instructions[109,110]. Community Pharmacists could neglect or poorly

assess and inadequately identify poor health literacy in patients[111]. This may be due to a number of reasons. Firstly, patients with limited health literacy are often embarrassed by their lack of understanding of health information, and so tend to hide their poor health literacy[112]. Secondly, most patients with limited health literacy describe themselves as reading and writing English well or very well[7]. Thirdly, individuals with limited health literacy skills come from a variety of backgrounds, including different races and socioeconomic classes[35,113]. Finally, as previously mentioned, health literacy is a context-dependent skill, meaning that individuals with high literacy skills who function well in one environment, may still struggle to understand health literacy skills. In other words, individuals having an adequate understanding of material with familiar content may, find it difficult to comprehend information with unfamiliar vocabulary, such as health information or navigating the healthcare system[113]. Because of all these reasons it is therefore, important for community pharmacists to remember that patients of all ages, nationalities, education and income groups are at risk of limited health literacy or medication-literacy.

Community Pharmacists, in England, have an increasingly important role to play in improving medication-literacy which has been supported by current health policy. A recent White Paper (government policy document) from the DH in England, called "Pharmacy in England – building on strengths, delivering the future"[114], sets out an innovative agenda for improving patient care by building on existing strengths of community pharmacy to deliver further improvements in pharmacy services, such as helping people to interpret and decide about the many sources of medicine information now available. It also talks about building stronger local bonds with patients by promoting a culture of 'better health literacy for all', as there are over 11,500 community pharmacies in the UK, mostly located in communities where people live, work and shop, and 75% of people report to

have visited a community pharmacy for health-related reasons in a 6 months period[115], illustrates that usage of community pharmacists is high and are well placed to support patients with medication-literacy issues. Geurts et al.[116], adds that community pharmacists' availability of services enables interaction with a large number of people more regularly, which provides them with wide latitude of opportunity to convey health messages, support self-care and advice people, with regard to their health and medicine concerns. Whether community pharmacists are a source for building medicine knowledge in patients to help them become medication-literate, they are certainly the source by which patients can learn about medicines and health.

In section 1.1 and 1.2 the definition of health literacy was introduced however, some authors have now changed or added to this definition to take in account the complexities of medicine taking. For example, Youmans et al.[117] make the observation that health literacy: 'Includes the ability to use (literacy) skills to read and understand health-related information, such as medication labels and insurance forms'. In addition, two pharmacy-specific definitions have been presented by King[118] and Pouliot[119]. The similarity seen in both these definitions are the multiple modes of information delivery, where other definitions have not addressed this. Thus, these two authors draw our attention to the fact that patients need to be health literate through, for example, written, oral, visual, images and symbols. A possible explanation for this might be the ever-increasing access of health and medicines information, mainly through print and internet, may mean greater health literacy skills from patients are required.

The community pharmacist can have a positive impact in addressing non-adherence through focusing on improved pharmacist-patient communication[120]. Rees[121] drew attention to the fact that pharmacists act as facilitators, facilitating

an individual's ability to take and use medicines correctly and knowledgeably. Successful adoption of this 'extended role' depends on pharmacists developing and refining their communicative skills. It has been suggested patients rank the interpersonal skills of their pharmacists highly, in terms of desirable features of consultations[122]. Similarly, another study by Morrow[123], surveyed 261 members of the public to gain their perceptions of pharmacist counselling where 72% of respondents replied that they were "often" or "always" satisfied with its' adequacy. In terms of the language used by the pharmacist, almost 50% of respondents found it to be very easily understood.

It has been suggested, that if pharmacists played a role in recognising limited health literacy in their patients, and go on to help those patients, it could enhance patients care and medicine adherence[124]. Most studies in the field of health literacy have focused on health outcomes, prevalence, population characteristics and patient's perspectives of healthcare professional services in relation to health literacy and far too little attention has been paid to healthcare professionals' awareness of health literacy, particularly community pharmacists. In addition, the use of health literacy interventions to support patients with medicines that can be used in the community pharmacy setting does not appear to have been explored. Both health literacy awareness by community pharmacists and the use of health literacy interventions could help patients become health literate. Thus, further research is needed to investigate pharmacists' awareness and understanding of health literacy, and in doing so explore whether they identify patients with limited health literacy. Furthermore, no previous studies have explored whether health literacy interventions can be effectively used in the UK community pharmacy setting.

1.9 Reflections from a Community Pharmacist and LPC Chief Officer

I have been in community pharmacy since the day I left school and a pharmacist for over 25 years and have spent a lot of time helping patients resolve medication-related issues, including those relating to poor health literacy. For the past 10 years, I been involved in representing and developing services for local community pharmacies within Stoke-on-Trent and North Staffordshire as Chief Officer for the Local Pharmaceutical Committee (LPC). My interest in undertaking this research stemmed largely from a project I was involved in, relating to health literacy in house-bound patients and how pharmacists could help.

A pharmacist colleague recently decided to further her interests in public health (PH) and undergo training to become a PH consultant. One of her placements was at Stoke-on-Trent LA, where she helped the LA gain a greater understanding of the role of community pharmacists. During this time, Stoke-on-Trent LA was involved in a health literacy study, the results of which, along with their insights into the community pharmacies, led to the LA contacting me to discuss the idea of community pharmacists being involved in a local service to help with health literacy needs of housebound patients. As the LPC Chief Officer, healthcare organisations routinely liaise with me about implementing services in community pharmacies.

I developed a health literacy service with the LA and proceeded to email community pharmacists in Stoke-on-Trent, inviting expressions of interest in taking part in this paid service. It was somewhat disappointing that only 10 out of 52 community pharmacists replied, mainly because usually training sessions and new services in my jurisdiction are generally well received by community

pharmacists. So, I rang some of the pharmacies who had not expressed an interest to explain the service details and remuneration, to briefly describe health literacy as a concept. During these telephone conversations community pharmacist often said that they had not heard of the term health literacy, and did not seem to understand the benefits for their practice and patients. After considerable time spent on the telephone, only a further five community pharmacists completed the expression of interest form.

I conducted a short training session for the 15 community pharmacists, which introduced the concept of health literacy, how it affected patients and the role of community pharmacists in assisting patients with limited health literacy. The session also detailed the service and payment structure. However, I was further disappointed and concerned when only four community pharmacists decided to take part in the service. When I contacted the pharmacists, who chose not to provide the service, it seemed that they had failed to see how improving health literacy could be incorporated within community pharmacy.

A lack of awareness of health literacy was similarly discovered by the CCG for the same geographical area. This group is chaired and attended by healthcare professions such as GPs, nurse and a secondary care consultant, and lay members. As LPC Chief Officer I attend the CCG's Planning Boards, which review various strategic plans for the local health economy, and I was surprised by the lack of documents referring to health literacy strategies, particularly given the Protheroe and colleague's study highlighting the extent of poor health literacy in the area[75].

Thus, a number of factors contributed to my concern that poor health literacy was not a priority within the health plans of Stoke and Staffordshire geographical

area. Consequently, I have carried out a brief literature review to help further understand health literacy, its relationship with health outcomes, medicines use and adherence and how community pharmacist has address health literacy.

1.10 Initial Study

The initial research study for this DPharm was conducted back in 2015. The initial study was a module of the DPharm qualification and is a small project used in measuring the ability and likelihood to complete the main research study successfully. It should not to be confused with the LA project mentioned in the above section.

The initial study had been to investigate community pharmacists' awareness of health literacy. Five community pharmacists were interviewed about their awareness and understanding of health literacy, their ability to identify patients and what changes, if any, they make to working practices to assist patients with limited health literacy.

The findings from this small study demonstrated that the community pharmacists did not appear to be aware of health literacy. However, it was found that some of the pharmacy services they offered may be useful for patients with limited health literacy. Furthermore, interview questions in the initial study concentrated too much on the confusion in patients that pharmacists saw. Whilst these are important questions to be asked, they did overshadow the majority of the interview. Thus, small changes to the interview template needed to take place such as, reducing the number of questions about patient confusion.

On reflection and from discussing the study with my supervisor the findings were perhaps rather predictable. Thus, increasing the sample size in the main study may firstly, not reveal too different results from the initial study. Secondly, would not add much of value or interest to the topic. Some awareness of health literacy is now increasing among health professionals across the country thus, a study that merely determines pharmacists' (lack of) knowledge of health literacy could rapidly become outdated, as interest in the topic starts to grow in the UK. With this in mind, it was necessary to widen the scope of this research in the main study.

1.10.1 Initial Thoughts for Main Study

As mentioned above only five pharmacists were interviewed in the initial study and although most pharmacists reported very similar views, it would be preferable to interview an estimated further 10-15 or so pharmacists to be confident no new themes will arise (i.e. saturate the data). However, small changes to the interview template took place such as, reducing the number of questions about patient confusion. The 5 interviews from the initial study will be used in the main study giving an approximate total of 15-20 or so pharmacist interviews.

The next stage was to think about how to educate the community pharmacists in the concept of health literacy and its consequences. Thus, there was need for a training programme/active learning session designed for the community pharmacists that could enhance their knowledge of health literacy in relation to medication-literacy and develop their confidence in the ability to recognise and interact with patients with poor health literacy.

During meeting with supervisors and reading the literature discussions took place regarding the use of health literacy interventions, devised and used from other countries. We had a vision of whether the usability could be tested within UK community pharmacies. It was discussed that the training session would introduce these interventions to the community pharmacists. After the set period of time using the tools the pharmacists could be interviewed. The interview would cover areas such as, their experiences of using the tools (e.g. how they used them, when, which patients etc.), how useful they perceived them to be, and any perceived limitations or adaptions that need to be made to increase their transferability to the UK.

1.11 Summary of Chapter

This chapter has discussed general literacy, health literacy, medication-literacy, prevalence and populations of people affected. The chapter then discussed the role of community pharmacists as healthcare professionals who provide medicines information and advice to patients and should be able deliver health literacy interventions to support medication-literacy in patients. Finally, the chapter discussed reasons for this present study.

CHAPTER 2: NARRATIVE SYNTHESIS

Chapter Overview

This chapter presents a narrative synthesis of existing literature into the health literacy awareness and understanding of the pharmacy profession, and also the use of health literacy interventions used to support patients in medicine taking and medication-literacy.

2.1 Introduction

A commonly used method to synthesise research in the context of systematic reviews is that of narrative synthesis; an approach to a systematic review and synthesis of findings from multiple studies that relies primarily on the use of words and text to summarise and explain the findings of the synthesis[125]. In the present study, a narrative synthesis was justified due to the flexibility with which quantitative and qualitative research studies can be combined within this analysis method. Further, narrative synthesis is also justified in that it is a systematic and transparent process, with guidance on enhancing trustworthiness[125]. Additionally, it would also encompass cross-disciplinary (pharmacists from various settings) and methodologically pluralistic research to map knowledge and interventions of health literacy in the pharmacy profession. The major findings of the narrative synthesis would then be used to explain what research tells us about the awareness and understanding of health literacy in the pharmacy profession, and how health literacy interventions can be used by community pharmacists.

2.2 Review

There are several stages that exist before the central elements of the narrative synthesis, and researchers are recommended to follow these stages[125], such as choosing appropriate questions, and inclusion and exclusion criteria, to define the review parameters. These stages will now be discussed in relation to this study.

Specifying the Review Question.

This stage entailed planning the research subject and question(s). The preliminary research objectives driving the review are health literacy knowledge and interventions in relation to the pharmacy profession. These objectives guided the following questions;

- ➢ What does the literature tell us about pharmacists' apparent awareness and understanding of health literacy?
- ➢ What are the health literacy interventions that pharmacists and/or pharmacy staff have been involved with to help their patients with poor medication-literacy or medication confusion?
- ➢ What do we know about how usable these interventions are in UK community pharmacy?

It was decided to conducted a review of the whole pharmacy profession and not just community pharmacists. In addition, the review would cover relevant literature from any country, so this could be compared with the UK. The review was undertaken this way because during my initial reading around the subject, for the period of time when the LA was funding the pharmacists to take part in a health literacy project (explained in chapter 1, section 1.8), I realised there was a

paucity of studies involving community pharmacist in the UK. By the review covering all pharmacy professions and other countries it was hoped that any gaps within the existing research could be identified, and key research priorities for health literacy and UK community pharmacists could be recognised.

Identifying Studies to Include in the Review.

At the outset of the study, inclusion and exclusion criteria were established to yield relevant data and clarify the research concept[126,127]. This was because if the search selected a large number of studies, there would need to be means by which irrelevant studies could be eliminated. Inclusion and exclusion criteria are set out below:

Inclusion Criteria

An inclusion criteria was used when assessing titles and abstract suitability for inclusion:

- All types of qualitative, quantitative and mixed methods studies were included
- Any country, provided that the research documents are written in English
- Any use of health literacy interventions used in the pharmacy setting or with pharmacy customers or patients.
- Where pharmacy staff perceptions have been explored with regards to the usefulness of the intervention, if that intervention took place in the pharmacy setting.
- Any intervention that took place in a pharmacy setting, that was classed as a health literacy intervention that could support patients with limited health literacy to take medicines effectively.

Exclusion Criteria

Excluded title and abstracts was based on the following criteria:

- Non-English-language publications

- Studies that taught health literacy and assessed the training course within universities or other student teaching environments i.e. non-pharmacy sites.

- Pharmacy used only as a site to recruit participants to take part in health literacy intervention.

- Studies where the environment was not specifically stated to involve a pharmacy and thus, was unclear whether a pharmacist or pharmacy staff was present within the setting.

- Studies that accessed the pharmacy database for information, such as dispensing figures, patient prescription re-fill activity (US studies), about the patient or health literacy practices, but did not use the pharmacy environment or staff for the study.

This stage of identifying studies to include in the review also involved developing a decision plan for where to search, which terms to use, and which sources were to be searched. These are now discussed.

Electronic Searches

The following electronic databases were searched from date of inception to 2018, with the search syntax being modified appropriately for each database: MEDLINE (OvidSP), The Cochrane Library, EMBASE and PsycINFO. These databases were selected as they are considered preferable databases in medical sciences; they were relevant to the topic under review and were comparable to databases

used in identified systematic reviews in a similar field[7,20]. Searches were also conducted in Web of Science and CINAHL. The databases selected produced the most relevant retrievals and with minimal duplication.

Additional Resources

Additional relevant papers were sought from reference lists of papers identified from the electronic search and selected for full text review. Furthermore, Grey literature review was carried out using DART-Europe and EthOS.

Search Strategy

The literature was initially searched at the beginning of the review and narrative synthesis process. This was then updated to check if any new literature was released during the final phase of the thesis write up. No new papers were found in this final stage. The search strategy deployed used a combination of controlled vocabulary specific to the individual database (e.g. MEDLINE Medical Subject Headings (MeSH terms)) and free text terms. A list of search terms used are given in Table 2

Data Management

The various mechanisms for searching generated references were entered into RefWorks® (online bibliographic management program) where duplicates could be removed.

Table 2. Search Terms Used in Review

Search Terms
health literacy
health literacy, community pharm*
health literacy, pharm*
health literacy pharm* practice
literacy, pharm*
literacy, pharm* practice
limited health literacy
medic* health lit*
literacy, patients understanding
literacy, patient knowledge
literacy, health education
literacy, counsel*

A combination of using 'AND' and 'OR' was used.
* replaces one or more letters, for example, searching on the term
phar* will locate records containing pharmacy, pharmacies, pharmacist
etc.

Screening

The large bulk of literature was initially assessed by reading the title and abstract
and comparing them against the criteria for inclusion and exclusion. Papers left
after the title and abstract elimination stage were then assessed for their full
eligibility to be included in the review, by reading full article text against the
inclusion and exclusion criteria.

Data Extraction and Study Quality Appraisal

Once the studies had been selected, a data-charting form (excel sheet) was used
for extraction of variables from each study, such as authorship, year of
publication, geographical origin of article, type of study (e.g. qualitative), study
design and tools, major findings, study subjects and interventions. The data was
also sorted into chronological order by year of publication. This gave a visual
representation of the historical dimension of studies on this topic.

This present study chose to assess each paper for quality using a criteria based on the Critical Appraisal Skills Programme's (CASP)[128] ten questions for qualitative research. The CASP is part of the Oxford Centre for Triple Value Healthcare Ltd (OCTVH) and thus was chosen, mainly because of OCTVH's extensive experience in developing quality assessment criteria over the past decade, and that the resource tools they provide allow the researcher to appraise each study design. Furthermore, it has also been cited in National NHS Quality Improvement documentations[129] and in the Cochrane Handbook[130] as a good appraisal tool. Another advantage of the CASP was its ease of use, as it comprises of ten questions addressing clarity of aims; appropriateness of qualitative methodology, research design, recruitment strategy and data collection method; consideration of reflexivity and ethical issues; rigor of analysis; clarity of findings; and the value of the research. Each question in the CASP has a number of prompts, and data were extracted on a standard pro forma instrument based on these questions and prompts. Previous authors have modified the CASP instrument for use with meta-ethnographies[131-133] however, it is unclear whether these revised versions have been validated.

Other appraisal tools were considered, such as the Qualitative Assessment and Review Instrument (QARI) which offers eighteen questions however, the decision not to employ the QARI was influenced by the lack of guidance provided for each question. The availability of guidance in the CASP resources was seen to help to reduce ambiguity surrounding the questions, so that a similar interpretation of the question can be achieved, should the review take place in the future by a second party.

Narrative Synthesis

A narrative synthesis approach following the guidelines developed by Popay and colleagues[125] was applied to this review. Narrative synthesis was adopted due to the flexibility with which quantitative and qualitative research studies can be combined within this analysis method. The Popay narrative synthesis consists of four central elements:

1) Develop a theoretical model to explain how, why and for whom the intervention works

2) Produce a preliminary synthesis of the results from the included studies

3) Find the relationships in the data

4) Evaluate the rigour of the narrative synthesis.

Each of these elements are now discussed in relation to the present review.

Develop a Theoretical Model

In the narrative synthesis for this present study, no *prima facie* attempt was made to develop a theoretical basis for the work, so this element of the guidance was not applied.

Preliminary Synthesis

Preliminary synthesis of the available literature consisted of extracting the descriptive characteristics of retrieved articles in a table, so as to produce a textual, visual representation of the results. This enabled the exploration of relationships and patterns both within and between studies reviewed, as well as quality appraisal of the methodology used in the studies.

Find Relationships in the Data

The following information was extracted; health literacy intervention such as written, visual, verbal and the knowledge of health literacy by the pharmacy profession. Relationships between and within studies were explored further through thematic analysis to identify emerging themes relative to health literacy knowledge and health literacy interventions in the pharmacy profession.

Evaluate the Rigour

This is the final element of the narrative synthesis process. Five different methods were suggested by Popay[125], all of which are concerned with the identification of insufficient, inadequate and discrepant data. Critical reflection is one suitable method to articulate the strength of interpretive evidence within the review. The reflective steps taken in this review involved (1) the methodology of the synthesis used, particularly focusing on the limitations of studies and how this may have influenced the results, (2) the evidence used such as quality, validity and generalisability or transferability and whether the process of generating evidence emphasised the impact of sources of bias, (3) identifying any assumptions made by the authors/researchers and (4) any uncertainties or discrepancies in the evidence provided.

2.3 Results

The following section will present the results from the literature review, giving details of author, dates, methods and outcomes of each study found. The section will then go on to present the findings of the critical appraisal process using the

CASP model discussed in section 2.2. The characteristics of the studies found are then presented, along with the findings from the narrative synthesis.

2.3.1 Search Results

A total of 8592 citations were retrieved, and of these twenty-nine papers were included in the review. Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines were used to guide reporting of the literature reviewed and a flow diagram is shown in Figure 4.

Figure 4. PRISMA Diagram
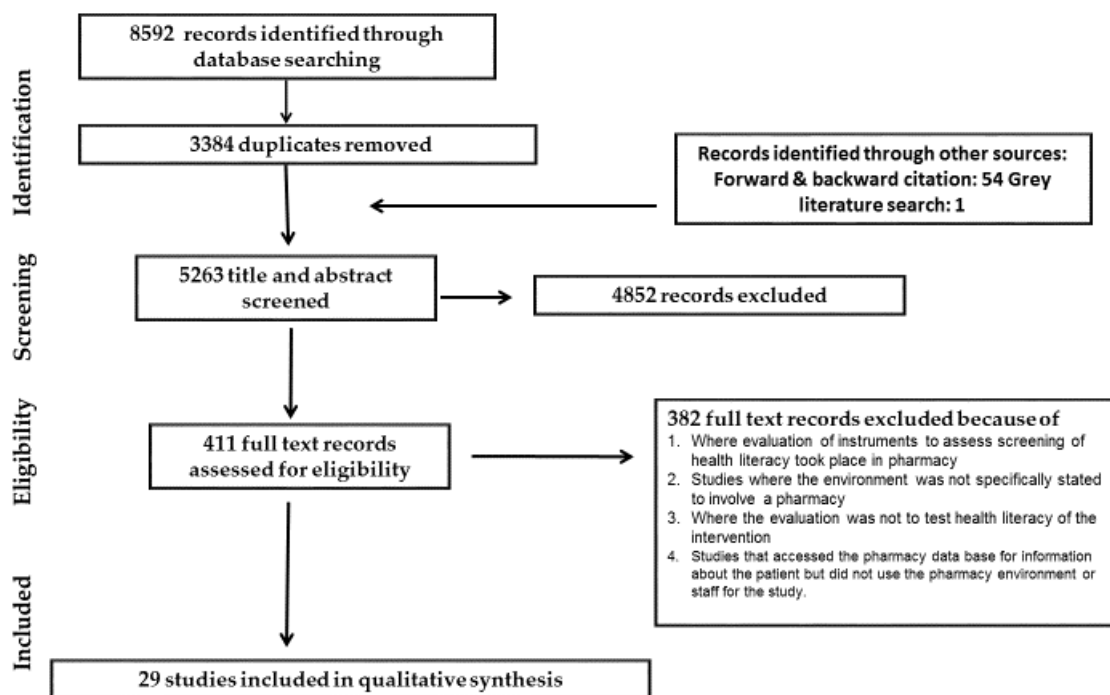
Twenty-nine studies exploring the pharmacy professions' knowledge of health literacy and use of health literacy interventions were identified at the end of the literature search process. Table 3 shows the author, methodology, country, pharmacy setting, participants and outcomes of the twenty-nine studies.

Table 3. Final Publications for Review

Study ID	Country	Pharmacy setting	Participants	Study Design & Intervention	Methods	Outcomes
Berthenet 2016[134]	Canada	community	135 patients over 65yrs from 3 community pharmacies	**Qualitative** Visual	Semi-structured interviews, thematic analysis	76 pictograms were assessed. A total of 50 pictograms achieved more than 67% comprehension. Pictograms depicting precautions and warnings against certain side effects were generally not well understood. Gender, age, and education level all had a significant impact on the interpretation scores of certain individual pictograms. Accompanying pictograms with education about these pictograms and important counselling points remains extremely important.
Bradley-Baker 2011[135]	USA	APP	113 pharmacists	**Mixed methods** Visual Verbal Label/bottle	Online survey, open and close questions, descriptive stats	Pharmacists who completed formal health literacy training and those in community pharmacy practice appeared to provide greater access to easy-to-read printed materials in their health-care settings and were willing to provide competent verbal consultation about medications. Pharmacists need additional training regarding health literacy, such as methods to improve communication
Burghardt 2013[136]	USA	community	99 adults were included in the intervention group and 94 adults were in the control group.	**Quantitative** Written Visual Verbal	Quasi-experimental, 5-point Likert QA	Game participants were significantly more likely than the control group to indicate they would seek pharmacist medication advice in the future.

Callahan 2013[18]	USA	clinic	4 rheumatology and 4 cardiology practices containing physicians, nurses, laboratory staff, pharmacists, rehabilitation specialists, receptionists, and administrative personnel	**Mixed methods** Visual Verbal Reminder aids	phone call structured interview and QA no data analysis given	Pharmacists have a key role in communicating with patients and caregivers about various aspects of disease self-management, which frequently includes appropriate use of medications. strategies in the two new toolkits could also be applicable to community pharmacy settings
Collum 2013[137]	USA	clinic	19 patients aged 65yrs and over with 8 medicines or more	**Quantitative** Visual Verbal	structured Telephone interview	Patients commonly reported that the pharmacist provided the counseling for new prescriptions. A minority of patients reported the use of various recommended clear health communication techniques by the pharmacist, and an even smaller percentage expressed expectations for their use. Patient-pharmacist interactions consistently met or exceeded patient expectations. However, pharmacists use of literacy-based communication techniques was low as were patient expectations.
Coughlan 2012[138]	Ireland	community	10 community pharmacies. 32 staff from pharmacies. 53 patients.	**Mixed methods** Written Visual	5-point Likert QA + focus groups	88.7% of patient respondents (n=53) liked the concept of the 'Self Care'' cards and 83% of respondents agreed that the use of the card was beneficial to their understanding of their ailment. Focus groups with Pharmacy staff highlighted the importance of

						appropriate training for the future development of this initiative. The 'Self Care'' initiative has the potential to be Pharmacy's contribution to health education in Ireland.
*Devraj 2015[139]	USA	APP	701 of all practising pharmacists	**Quantitative** Verbal	Mailed survey, 4-point Likert	Using simple words (96%) and asking patients open-ended questions to determine comprehension (85%) were the most frequent methods that pharmacists used to communicate with patients. Only 18% of respondents always asked patients to repeat medication instructions to confirm understanding. Pharmacists infrequently use action-oriented health literacy interventions such as using visual aids, having interpreter access, medication calendars, etc. Additional training on health literacy are essential
*Devraj 2012[140]	USA	APP	701 of all practising pharmacists	**Quantitative** N/A	Mailed survey, 4-point Likert	Pharmacists have limited knowledge of health literacy. Pharmacists had poor knowledge about prevalence of low health literacy, its relationship to years of schooling and its lack of relationship to reading comprehension. The most frequently cited barrier towards low health literacy interventions were lack of adequate time.
*Devraj 2011[141]	USA	APP	701 of all practising pharmacists	**Quantitative** N/A	Mailed survey, 4-point Likert	The barriers were 3 components: (1) practice-related barriers, (2) knowledge and interaction-related barriers, and (3) process barriers.

Duncan 2014[142]	Australia	community	72 pre-intervention pharmacies with 143 patient visits and 63 post-intervention with 126 patient visits. 5 Focus group (no number of participants given)	**Mixed methods** Visual Verbal	patient survey + Focus groups	Pharmacists agree that more continuing education and professional development in health literacy is needed in the community pharmacy context. The implementation of changes to improve the 'health literacy friendliness' of a pharmacy is a time-consuming process, and difficult to Measure
Gazmararian 2010[143]	USA	Hospital	173 patients with 102 control patients from three pharmacies and one pharmacy control site	**Quantitative** Verbal Label/bottle Reminder aids	Quasi-experimental, survey	Implementation of a 3-part intervention—automated telephone reminders, picture prescription card, and pharmacist communication skills training—did not significantly improve refill adherence among inner-city patients.
Hamrosi 2013[144]	Australia	APP + other HCPs	29 community pharmacists, 32 GPs, 7 hospital pharmacists	**Qualitative** Written	focus groups, thematic content analysis	Participants were ambivalent about supplying written medicine information to their patients and concerned about its impact on the patient-provider relationship. This contributed to limited provision, despite the information being available for all medicines. A tailored approach to meet individual patient information preferences, together with efforts to support professionals as facilitators of information may increase written medicine information utilization as an information-sharing tool to improve health literacy and patient engagement.

Hinchliffe 2010[145]	UK	community	community pharmacy - numbers not given	**Qualitative** Written Visual Verbal Label/bottle	Survey open questions	Health literacy is new to many pharmacists although many areas of health literacy interventions were being carried out by pharmacists. more knowledge is required to equip pharmacists with the knowledge and skills to support patients with limited health literacy.
Johnson 2010[146]	USA	Community + other HCPs	275 patients participated in baseline interviews in 3 hospital pharmacies. 26 patients in the focus groups. 7 pharmacists interviewed	**Mixed methods** Written Verbal	structured interviews + focus groups. Thematic analysis	Social support was associated with better medication adherence for patients with adequate health literacy but not those with limited health literacy Comments from patients and pharmacists suggest that limited-literacy patients were less likely to ask the pharmacists questions and infrequently brought relatives with them to the pharmacy. Pharmacists need training to increase their awareness of limited health literacy and to communicate effectively with all patients, regardless of their literacy skills.
Kenning 2015[147]	UK	Community + other HCPs	10 GPs, 10 community pharmacists and 15 patients. Patients were over 65yrs of age and had 5 or more medicines	**Qualitative** Reminder aids	Semi structured interviews. Constant comparative	The UMS chart provides consolidated medicines information that might help to improve patients' knowledge and health literacy, which may or may not improve adherence but could help patients in making informed decisions about their treatment. One of the key benefits of using the UMS in practice is that it could be introduced across services. In this way it may aid in medicines reconciliation between healthcare settings to ensure continuity of message, improve patient

						experience and create more joined up working between services.
Kripalani 2012[148]	USA	hospital	851 patients with CVD. 11 pharmacists involved in their care	**Quantitative** Written Visual Verbal Reminder aids Educational - Packages	RCT Telephone structured interview	Clinically important medication errors were present among half of patients after hospital discharge and were not significantly reduced by a health-literacy sensitive, pharmacist-delivered intervention
Lambert 2014[149]	Australia Canada, New Zealand	APP + other HCPs	29 healthcare professionals including 4 pharmacists	**Qualitative** N/A	Semi-structured interviews, thematic analysis	This study suggests that health professionals have a limited understanding of health literacy and of the consequences of low health literacy for their Indigenous patients. This lack of understanding combined with the perceived barriers to improving health literacy limit health professionals' ability to improve their Indigenous patients' health literacy skills and may limit patients' capacity to improve understanding of their illness and instructions on how to manage their health condition/s.
Mihalopoulos 2013[150]	USA	community	44 community pharmacists	**Quantitative** N/A	pre-survey and post- 5-point Likert QA	After participating in the health literacy training course, pharmacists' average test scores on knowledge-based questions increased and their confidence and comfort levels toward working with patients with low health literacy in 5 specified areas improved. The majority of participating pharmacists felt that the training course provided them with helpful resources and communication methods and that it was useful to their practice setting.

Morral 2017[16]	UK	community	44 community pharmacists	**Quantitative** N/A	Structured Mailed QA	Community pharmacist's symptom recognition was high for depression but lower for bipolar disorder and schizophrenia. Pharmacists showed a preference for evidence-based interventions and support for psychological therapies and physical activity for all three mental health problems. Mental health stigma was higher for schizophrenia and bipolar disorder than depression, with many pharmacists holding misperceptions about schizophrenia and bipolar disorder.
Morrow 2007[160]	USA	hospital	Elderly patients diagnosed with chronic heart failure (CHF) (83 in the intervention; 153 in usual care control group).	**Quantitative** Written Visual Educational - Packages	RCT. QA	Patient-centred instructions were preferred for learning about adherence information (e.g., schedule) and standard instructions for learning about drug interactions. Preference for the patient-centred instructions was greater for intervention versus control participants and for participants with lower health literacy. Literacy no longer predicted preferences with patients' cognitive abilities controlled, suggesting literacy reflected more fundamental cognitive mechanisms
O'Neal 2013[151]	USA	community	6 community pharmacies, 31 staff, 60 patients, and 4 independent auditors.	**Mixed methods** Written Visual Verbal Label/bottle	survey + semi-structured interviews	The majority of patients and staff were in agreement that written materials were easy to read. However, the auditors did not report equally high agreement regarding the readability qualities of the written materials. While the majority of staff reported use of literacy-sensitive communication techniques with patients, only a

						minority of patients reported actual communication with the pharmacist and use of literacy-sensitive communication techniques. At trained pharmacies, a significantly larger proportion of patients reported that the pharmacist spent enough time answering their questions. A significantly smaller proportion of pharmacy staff also reported using the repeat-back technique at the trained pharmacies
O'Reily 2010[17]	Australia	AAP	391 practising pharmacists	**Quantitative**. N/A	Structured Mailed questionnaire	The majority of pharmacists had a high degree of mental health literacy as indicated by the correct identification of, and support for evidence-based interventions for mental illnesses
Palumbo 2018[152]	Italy	community	16 pharmacies	**Quantitative** Written Verbal	Structured QA. 9-point Likert-type scale	The units of analysis were aware of the impacts of inadequate organizational health literacy on the ability of patients to understand and use health information; however, the organizational commitment to address the needs and the expectations of low health literate patients was limited among the units of analysis.
Praska 2005[153]	USA	community	30 community pharmacies	**Qualitative** Written Verbal Reminder aids	Semi-structured Telephone interview. Frequency reporting.	Pharmacies infrequently attempt to identify and assist patients with limited literacy skills. Only 2 (7%) pharmacies reported attempting to identify literacy-related needs among their patrons. One of these facilities provided additional verbal counselling to assist low-literacy patients, and the other pharmacy involved family members, provided verbal counselling, and had

						patients repeat instructions to confirm comprehension. Most pharmacies reported availability of adherence aids that could help low-literacy patients if such patients were identified and targeted to receive additional assistance.
Schwartzberg 2007[154]	USA	APP + other HCPs	99 physicians, 87 nurses 121 pharmacists	**Quantitative** Written Verbal	QA. 5-point Likert scale	Using simple language (94.7%), handing out printed materials (70.3%), and speaking more slowly (67.3%) were the most commonly used strategies. Strategies currently recommended by health literacy experts were less routinely used.
Schnipper 2010[155]	USA	hospital	30 patients were at least 18 years of age and admitted for acute coronary syndrome (ACS) or acute decompensated heart failure (ADHF).	**Quantitative**. Educational - Packages	RCT telephone structured interview	The primary outcome is the occurrence of serious medication errors in the first 30 days after hospital discharge. Secondary outcomes are health care utilization, disease-specific quality of life, and cost effectiveness. The PILL-CVD intervention, if effective, will inform health care facilities on the use of pharmacist-assisted medication reconciliation, inpatient counselling, low-literacy adherence aids, and patient follow-up after discharge
Van Beusekom 2017[156]	Netherlands	community	197 pharmacy visitors.	**Qualitative** Visual	Semi-structured Interviews thematic framework	Low-literate people have more difficulty understanding pictograms than people with adequate literacy. While the risk of false confidence is low, for critical safety information, 67% understanding might not be sufficient. Design strategies for pharmaceutical pictograms should focus on familiarity, simplicity, and

						showing the intake and effect of medicine.
Watermeyer 2009[157]	Africa	Clinic	26 patients	**Qualitative**. Verbal	Semi-structured Interviews thematic content analysis	Various strategies for verifying patient understanding were identified in the data, including eliciting a demonstration of understanding, using specific questions to verify understanding, using response solicitations and monitoring patients' verbal and non-verbal responses. These strategies for verification of patient understanding appear to be effective tools which enable pharmacists to identify misunderstandings or initiate clarification sequences.
Yeung 2003[158]	USA	clinic	34 patients	**Quantitative** Visual	Quasi-experimental, survey	The majority of patients scored a high possibility of limited health literacy on the NVS tool. The use of flashcards and QR-coded prescription bottles for medication and disease state education is an innovative way of improving adherence to diabetes, hypertension, and heart failure medications in a low-health literacy patient population.

*One study consisting of 3 papers with different parts of the study. QA= Questionnaire, APP=all pharmacy professionals, healthcare professionals=healthcare professionals

2.3.2 Critical Appraisal Results.

The CASP was applied to all twenty-nine studies; each of the ten CASP questions was scored as 0 or 1. Each study was then given a quality rating ranging from A to C based on the overall score. Based on Walsh and Downe's[159] suggestions, category 'A' represented studies which were rated as high quality and low bias; these studies scored between 8 and 10 on the CASP. Category 'B' studies were rated as moderate quality and moderate bias and contained CASP scores of 5 to 7. Category 'C' studies contained CASP scores of 2 to 4 and represented low quality and high bias.

The CASP highlighted some variation between studies in terms of their methodological rigour, credibility, and relevance.

Table *4* shows the results of the CASP scoring where sixteen studies[16,17,135,139-141,146-148,150,151,153,154,156-158] were scored as Category A; having high quality and low bias, while twelve studies[18,134,136-138,142-144,149,152,155,160] were Category B; moderate quality and bias and one Category C; low quality and high bias[145].
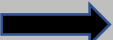
The majority of studies gave adequate details on participant demographics. There was a mix of participants in the studies ranging from patients, pharmacists, GPs and nurses. The majority of studies reported adequately on how and where participants were recruited. However, one study[17] did not give details of how the participants of pharmacists were randomly sampled for the study. Sample sizes differed greatly between studies, ranging from healthcare staff in eight clinics[18] to 701 all practising pharmacists[139-141], although one study[142] did not give details of how many participants took part in the focus group, in part five of their study. The three studies by Devraj[139-141], using a the same sample set of 701 all

practising pharmacists, were the same study in three separate papers however, they failed to reveal which pharmacy setting the participants represented.

The research approach taken by fifteen studies was quantitative[16,17,136,137,139-141,143,148,150,152,154,155,158,160], eight were qualitative[134,144,145,147,149,153,156,157], and the other six[18,135,138,142,146,151] being mixed methods. Data collection methods also varied greatly, and consisted of structured and semi-structured interviews, focus groups, surveys and Quasi-experimental. In those studies that employed interviews as a data collection method, the length of interviews and amount of time participants were required to commit to the studies was rarely documented, although in all studies the participants were only interviewed the once.

Due to the variability of methodological approaches used, the methods of data analysis varied too. The majority of studies had clear outlines of the frameworks which were used. These included: Content analysis, Thematic analysis and Comparative content analysis, although six studies failed to report how qualitative data was themed[18,135,138,145,151,153]. For example, one study[135] used a survey of open and closed questions, and whilst the author described the data analysis of the closed questions, they failed to explain how the responses to the open questions were themed. Similarly, Callahan's[18] study consisted of two phases, both using quantitative and qualitative data analysis however, the author failed to describe which statistical tests were used and how the qualitative data was themed. Majority of studies demonstrated a weakness in the reporting of reflexivity processes, as well as failing to outline if and how the credibility and trustworthiness of the data were achieved.

Table 4. CASP Scoring of Published Papers

CASP Criteria (10 Items) →	Screening Question: Is there a clear statement of aims?	Screening Question: Is methodology appropriate?	Appropriate justification of research design	Sampling	Data collection	Reflexivity	Ethical issues	Data analysis	Findings	Value of the research	Overall Quality Score out of 10 (Quality Rating)	CASP Rating
Berthenet 2016[134]	✓	✓	Can't tell	✓	✓	No	✓	✓	✓	Can't tell	7	**B**
Bradley-Baker 2011[135]	✓	✓	✓	✓	✓	No	✓	Can't tell	✓	✓	8	**A**
Burghardt 2013[136]	✓	✓	Can't tell	✓	Can't tell	No	✓	✓	✓	Can't tell	7	**B**
Callahan 2013[18]	✓	✓	✓	✓	✓	No	No	No	✓	✓	7	**B**
Collum 2013[137]	✓	✓	Can't tell	✓	✓	No	Can't tell	Can't tell	✓	✓	6	**B**
Coughlan 2012[138]	✓	Can't tell	Can't tell	✓	✓	No	Can't tell	✓	✓	✓	6	**B**
Devraj 2015[139]	✓	✓	✓	✓	✓	Can't tell	✓	✓	✓	✓	9	**A**
Devraj 2012[140]	✓	✓	✓	✓	✓	Can't tell	✓	✓	✓	✓	9	**A**
Devraj 2011[141]	✓	✓	✓	✓	✓	Can't tell	✓	✓	✓	✓	9	**A**
Duncan 2014[142]	✓	✓	Can't tell	Can't tell	✓	Can't tell	✓	✓	✓	✓	7	**B**
Gazmararian 2010[143]	✓	✓	No	✓	✓	No	✓	✓	✓	Can't tell	7	**B**
Hamrosi 2013[144]	Can't tell	✓	Can't tell	✓	✓	No	✓	✓	✓	✓	7	**B**
Hinchliffe 2010[145]	No	No	Can't tell	✓	Can't tell	No	No	Can't tell	✓	✓	3	**C**

Study	1	2	3	4	5	6	7	8	9	10	Score	Rating
Johnson 2010[146]	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10	**A**
Kenning 2015[147]	✓	✓	✓	✓	✓	No	✓	✓	✓	✓	9	**A**
Kripalani 2012[148]	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10	**A**
Lambert 2014[149]	✓	✓	Can't tell	✓	✓	No	Can't tell	✓	✓	Can't tell	7	**B**
Mihalopoulos 2013[150]	✓	✓	✓	✓	✓	No	No	✓	✓	✓	8	**A**
Morral 2017[16]	✓	✓	Can't tell	✓	✓	No	✓	✓	✓	✓	8	**A**
Morrow 2007[160]	✓	Can't tell	Can't tell	✓	✓	Can't tell	No	✓	✓	Can't tell	5	**B**
O'Neal 2013[151]	✓	✓	✓	✓	✓	Can't tell	✓	✓	✓	✓	9	**A**
O'Reily 2010[17]	✓	✓	✓	Can't tell	✓	No	✓	✓	✓	✓	8	**A**
Palumbo 2018[152]	✓	✓	Can't tell	✓	✓	No	No	Can't tell	✓	✓	6	**B**
Praska 2005[153]	✓	✓	✓	✓	✓	No	✓	Can't tell	✓	✓	8	**A**
Schwartzberg 2007[154]	✓	✓	✓	✓	✓	Can't tell	No	✓	✓	✓	8	**A**
Schnipper 2010[155]	Can't tell	✓	✓	✓	✓	No	Can't tell	✓	Can't tell	✓	6	**B**
Van Beusekom 2017[156]	✓	✓	✓	✓	✓	No	Can't tell	✓	✓	✓	8	**A**
Watermeyer 2009[157]	✓	✓	✓	✓	✓	No	No	✓	✓	✓	8	**A**
Yeung 2003[158]	✓	✓	✓	✓	✓	✓	Can't tell	✓	✓	✓	9	**A**
SCORE - Yes = 1, No = 0 and Can't tell = 0, the total score was calculated based on the proportion of 'Yes' 8 – 10 = category A rating 5 – 7 = category B rating Below 5 = category C rating													

2.3.3 Characteristics of Studies

Figure 5 shows the year of publication for the studies, and demonstrates that there was a peak of publications during 2010 and again in 2013. Apart from these two years the number of publications for pharmacy has remained constant. The reason for increased publications in 2010 could be due to the launch of The National Action Plan to Improve Health Literacy[76] released in May 2010 by the US. In 2013 the WHO launched an addition to their Solid Facts series entitled Health Literacy: The Solid Facts[161], which may again, explain the increase publications during that year.

Figure 5. Year of Publications
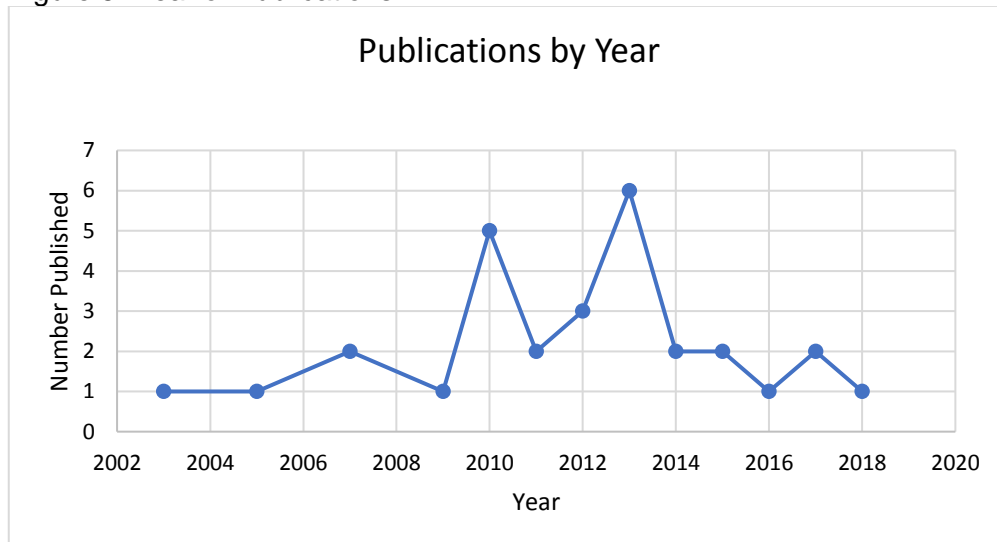
Figure. 6 it can be seen that the largest number of studies was conducted in the USA (17/29) in contrast, other countries had much fewer publications. For example, the UK had three publications.

Figure. 6 Origin of Studies
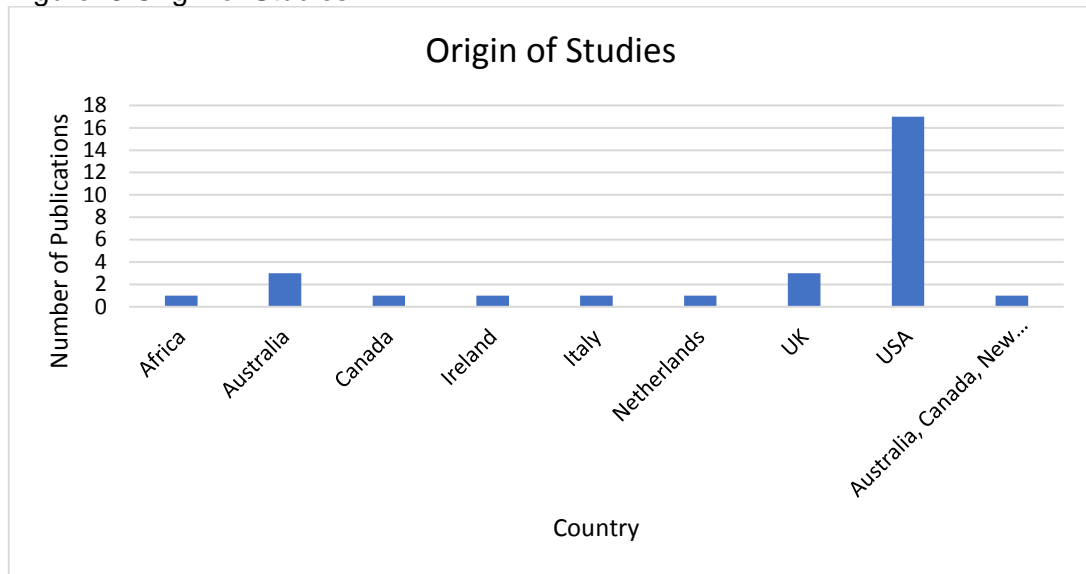
The pharmacy setting in which studies where carried out are shown in Figure 7. This figure shows that community pharmacy was the highest pharmacy setting for studies to be carried out. Studies involving all practising pharmacists (APP) were the second highest.

Figure 7. Pharmacy Setting of Studies
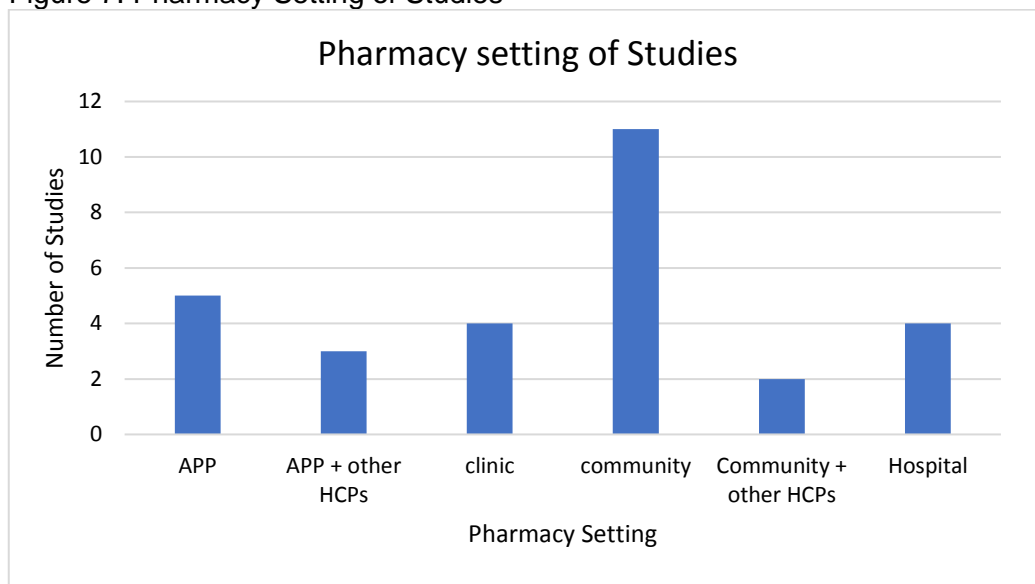
Key: APP=all pharmacy professionals, HCPs=healthcare professionals

Figure 8 shows the pharmacy setting by country in which studies took place. It can be seen that the USA carried out studies in all the pharmacy settings, with the most in hospital and community setting, along with studies involving all practising pharmacists. The UK carried out two studies within community pharmacy and one study involving the community and other healthcare professionals setting.

Figure 8. Pharmacy Setting for each Country
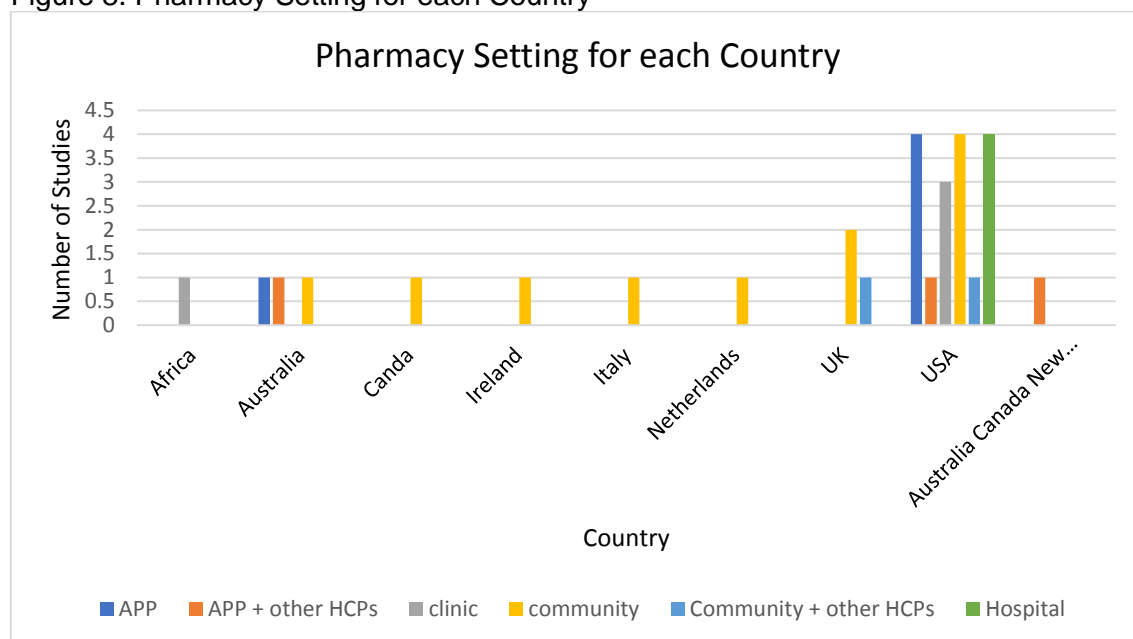
Key: APP=all pharmacy professionals, healthcare professionals=healthcare professionals

2.3.4 Narrative Synthesis Results

Health Literacy Interventions

The review identified that twenty-three of the twenty-nine studies involved health literacy interventions that were used in the pharmacy setting (

Table *5*). Six different types of health literacy intervention were identified. The most common type of intervention was verbal (15 studies) followed by then visual (13 studies) written (12 studies), label and bottle (6 studies) and education packages (6 studies) and finally, reminder aids (5 studies). Some studies used multiple interventions strategies and thus, fell into a number of categories applicable to the interventions used.

The countries of origin for the studies were fourteen for the USA[18,135-137,139,143,146,148,151,153-155,158,160], two each for Australia[142,144] and the UK[145,147] and one each for Canada[134], Netherlands[156], Africa[157], Italy[152] and Ireland[138]. In relation to the pharmacy setting where the health literacy intervention took place, nine were in community pharmacy[134,136,138,142,145,151-153,156], four were in the clinic setting[18,137,157,158], four hospital[143,148,155,160], and two for each of the 'all practising pharmacists'[135,139], 'all practising pharmacists and other healthcare professionals'[144,154] and 'mix of community and healthcare professionals setting'[146,147], such as hospital or GPs, categories.

As mentioned above six different types of health literacy interventions were found. Each of these will now be discussed in turn.

Verbal Communication Interventions.

Studies that met this category included patient consultation services, health coaching, patient-centred advice, medicine reviews, telephone counselling and Teach-Back. Fifteen studies[18,135-137,139,142,143,145,146,148,151-154,157] used verbal communications as a health literacy intervention. Eleven studies were conducted in US[18,135-137,139,143,146,148,151,153,154] and only one in the UK[145], along with one each for Africa[157], Italy[152] and Australia[144]. Of the fifteen studies, six took place in

community pharmacy[136,142,145,151-153], although only one of these was from the UK[145]. Of the fifteen studies, eight[135,139,146,148,151,153,154,157] were rated as 'A' - high quality and low bias, six[18,136,137,142,143,152] rated as 'B' - moderate quality and moderate bias and one[145] as 'C' -low quality and high bias

The study by Schwartzberg[154] was rated as 'A' and found that pharmacists reported using simple language (94.7%) and speaking slowly (67.3%) however, using Teach-Back was only reported by 39.5% of pharmacists. Although this figure is still significant there were no studies from the UK to support similar findings with UK pharmacists. Bradley-Baker[135] also reported that pharmacists rarely used Teach-Back in their verbal communications with patients, and that many of the respondents were not knowledgeable about the Teach-Back intervention. Both of these studies did not state how many community pharmacists where in the sample of all practising pharmacists.

Devraj et al.[139] another US study, rated as 'A' in the quality assessment, reported that pharmacists used simple words (96%) and asked patients open-ended questions to determine comprehension (85%) of medicines and health information. Yet, only 18% of pharmacists always asked patients to repeat medication instructions to confirm understanding (Teach-Back).

From the review it could not be concluded how the Teach-Back method was taught to the pharmacists in order to understand how it could be effectively implemented. More studies are needed to assess the use of Teach-Back by community pharmacists in the UK in their day-to-day practice, and any perceived barriers in using this method of communication. It is therefore recommended that pharmacists are trained in the use of this communication method, and the

benefits of using Teach-Back and what it can bring to both the pharmacist and their patients.

Visual Interventions.

Thirteen studies[18,134-138,142,145,148,151,156,158,160] categorised interventions as visual, which included pictures, pictograms, computerised text, audio booklets, animations, videos and graphics. Of the thirteen studies, five[135,148,151,156,158] were rated as 'A' - high quality and low bias, seven[18,134,136-138,142,160,162] rated as 'B' - moderate quality and moderate bias and one[145] as 'C' -low quality and high bias

Of the thirteen studies, eight were from the US[18,135-137,148,151,158,160], with only one each from the UK[145], Ireland[138], Canada[134], Australia[142] and Netherlands[156]. Seven interventions took place in the community setting[134,136,138,142,145,151,156], three in the clinic[18,137,158] and two in hospital[148,160] and one all practising pharmacists[135]. Of the eight community setting studies, only one was from the UK[145] however, this was rated as 'C' in the quality assessment scoring.

All studies investigated whether visual interventions affected limited health literacy patients medicine taking behaviour, or ability to seek advice about medicines. Many of the studies reported that visual interventions provided patients with additional knowledge on their medicines or treatment, while others reported increased adherence through the use of visual aids. Although these studies often recommended visual, pictorial displays as an aid to support medicine taking, many did not recognise that people vary in their ability to link a pictogram to its actual meaning. Many patients in these studies also received additional education from the pharmacist about using pictograms or visual displays, this therefore shows that pictograms are not a single-use health literacy intervention, and other interventions are needed alongside, such as verbal or

written interventions. For example, Berthenet[134] study used patients from three community pharmacies in Canada and gave them a number of pictograms to interpret. She concluded that the participants needed additional health literacy interventions to link the pictures with instructions, such as verbal communications and text. Berthenet[134] was scored a 'B' in the CASP quality assessment.

Only one study[138] addressed, briefly, buy-in for using visual display pictograms from stakeholders, such as healthcare professionals, a key point missing from many studies. Further research is recommended to help understand if pharmacists like these interventions, and could use them in their day-to-day practice.

Written Interventions.

Written information included providing easy-read materials for example; patient information leaflet, health brochures and easy-read letters. Of the twenty-three intervention studies found, written information featured in twelve[136,138,144-148,151-154,160]. Of these twelve studies, six[136,138,145,151-153] took place in the community setting and two in hospital[160,162]. Two studies took place in the UK[145,147], with seven taking place in the US[136,146,148,151,153,154,160]. However, one of the UK studies[145] was rated 'C' as low quality and high bias during the quality assessment scoring. This low scoring largely reflected inadequate information within the study. Of the seven US studies, two[136,160] where rated as 'B' and five[146,148,151,153,154] as 'A'.

In aggregate, these studies suggested that tailored written information for limited health literacy patients was important in mitigating the effects of poor medicine use and poor adherence. However, few studies examined this type of

intervention with adequate literacy patients. Furthermore, no studies explored the use of these interventions from the healthcare professional's perspective, such as ease of use or types of patients to use the intervention with (young, elderly, ethnic minority). For example, an Ireland study by Coughlan[138] reported, that self-care cards were an initiative useful in providing added-value service to all patients as well as limited health literacy patients however, only limited health literacy patient were used in the study. This study was scored at 'B' in the CASP quality assessment.

An Australian study by Hamrosi[144], scored as 'B', reported that healthcare professionals, including pharmacists, wanted better, readable, written information for use in their practice. The study did not elaborate how and when the healthcare professionals intended to use the 'improved' written information, and what type of patients they would expect to benefit from the improvements.

Label/Bottle Interventions.

Six studies[135,137,142,143,145,151] focused on medicine label or bottle instructions, including medicine bottle colours, pictures on labels, label designs and written instructions on the label. Four studies were conducted in the US[135,137,151,163] and one each from the UK[145] and Australia[142]. Three of these studies carried out the intervention in community pharmacy[142,145,151], with one[145] of these from the UK, however this study was rated as 'C'.

Many of the studies reported improved adherence with health literacy interventions focusing on labels, although many studies concluded that extra time for explanation on the label instructions was needed, placing additional demands on healthcare professionals. This therefore concludes that this intervention is not

a single-use health literacy intervention, and healthcare professionals must be prepared to use communication interventions to reinforce any message content. Furthermore, the intervention then becomes a verbal health literacy intervention, in addition to the label/bottle intervention. Studies did not estimate the time taken for healthcare professionals to perform this explanation, or whether this was a realistic expectation in relation to the healthcare professionals time during their day-to-day contact with patients.

Finally, drug labels should be designed together with PILs to avoid conflicting messages to patients. No studies in this review explored whether the pictures on labels, colours used and written instructions actually matched those in the PIL given with the drug. Further research is needed in this area to minimise inconsistent information that patients, including those with limited health literacy, may struggle to comprehend and process.

Education Packages.

Six intervention studies[142,143,145,148,155,160] were classified as educational packages. These included internet self-management programmes, pharmacist education and consultation programmes, home visits and personalised education programmes. Of the six studies, the majority were conducted in the USA[143,148,155,160] with only one each conducted in the UK[145] and Australia[142]. Of the six studies, four took place in the hospital setting[143,148,155,160] and two in the community setting[142,145]. Only one study[148] was 'A' rated during the quality assessment, with four[142,143,155,160] being 'B' rated and one[145] 'C' rated.

Educational packages appeared to show improvements in the patient's knowledge and adherence of medicines, although many reported that they could

be time consuming and costly. Some studies reported that the education packages activated patients to initiate conversations and discussions about their medicines with their healthcare professional, although not all studies explored or reported this.

One study[136] used games to deliver an intervention by recruiting adults 18 to 64 years old from an urban, multi-ethnic community setting to assess how interactive, educational board games influenced participants' knowledge about medicines and communication skills with their pharmacist. Participants who played the games were significantly more likely to report the intent to seek pharmacist medication advice in the future, compared to control group participants. This study was not a Randomised Controlled Trial (RCT) and rated as 'B' in the quality assessment. No other studies to date have used games to increase medication-literacy in patients.

Reminder Aid Interventions.

Of the twenty-three studies, medication reminder aids as a health literacy intervention was featured in five studies[18,143,147,148,153], with four from the USA[18,143,148,153], and one from the UK[147]. The interventions were conducted, in the main, in the hospital setting[143,148] with only one in community pharmacy[153] and this study was rated as 'A' - high quality and low bias.

Studies reported that when used correctly, reminder aids are an intervention that was positive in supporting limited health literacy patients. For example, Praska[153] reported that 27% (n = 8) of pharmacies used packaging or organisation aids such as pill boxes, blister packages and unit dosing services, 17% (n = 5) provided refill services, such as telephone contact when a patient was late for a

refill, automated refills or refill reminder cards mailed to the patient. Further graphic or multimedia aids, such as pill charts with pill images, or sign language, were used by 13% (n = 4) of pharmacies. The study concluded that all these interventions would assist limited health literacy patients in adhering to their medicines. This review scored the study as 'A', high quality and low bias.

A UK study[147], also rated as 'A' involved semi-structured face-to-face interviews with ten GPs and ten pharmacists. The study reported that the use of medicines aids, such as charts, was positive and could help patients with multimorbidity and polypharmacy understand and adhere to their medicines. It was concluded that this would, overall, help to support patients with limited health literacy. More studies are needed to understand how this type of intervention can be rolled out on a bigger scale, taking into account the cost and time to implement.

Key findings.

Twenty-nine studies were found for health literacy interventions that involved the pharmacy profession. The majority of studies were conducted within the US and only two in the UK[145,147] however, one[145] of the UK studies was rated as 'C' with low quality and high bias. Only nine[134,136,138,142,145,151-153,156] studies of the 29 studies were conducted in community pharmacy setting.

All studies concluded that health literacy interventions showed some improvement for limited health literacy patients for medication-literacy, medicine knowledge and/or medicine adherence. Although some studies mentioned that time constraints may be an issue for healthcare professionals when delivering health literacy interventions, the time taken to deliver these interventions and what pharmacists thought about the intervention was rarely explored. The

perception of using these interventions by pharmacists in their day-to-day practice was also not explored in any of the reviewed studies. In order for pharmacists to accept and use health literacy intervention, further research is need to explore how they can be used effectively in the community pharmacy setting with various patients and different consultations types, such as longer, sitting down consultation as opposed to short, over-the-counter, brief conversations.

Table 5. Health Literacy Interventions

Study ID	Country	Pharmacy setting	Study design	HEALTH LITERACY INTERVENTIONS					
				written	Visual	verbal	Label / bottle	Reminder aids	Education packages
Berthenet 2016[134]	Canada	community	Semi structured interviews		●				
Bradley-Baker 2011[135]	USA	APP	Online suvey		●	●	●		
Burghardt 2013[136]	USA	community	Quasi-experimental	●	●	●			
Callahan 2013[18]	USA	Clinic	Mixed methods (QA + phone call)		●	●		●	
Collum 2013[137]	USA	Clinic	Telephone interview – structured		●	●	●		
Coughlan 2012[138]	Ireland	community	Mixed methods (QA + focus groups	●	●				
Devraj 2015[139]	USA	APP	Mailed survey – quantitative			●			
Duncan 2014[142]	Australia	community	patient survey		●	●	●		●
Gazmararian 2010[143]	USA	Hospital	Quasi-experimental, survey			●	●	●	●
Hamrosi 2013[144]	Australia	APP + other healthcare professionals	focus groups, thematic content analysis	●					
Hinchliffe 2010[145]	UK	community	survey	●	●	●	●		●

Study	Country	Setting	Method						
Johnson 2010[146]	USA	Community + other HCPs	Mixed methods structured interviews + focus groups	●		●			
Kenning 2015[147]	UK	Community + other HCPs	Semi structured interviews					●	
Kripalani 2012[148]	USA	hospital	RCT qualitative	●	●	●		●	●
Morrow 2007[160]	USA	hospital	RCT qualitative questionnaire	●	●				●
O'Neal 2013[151]	USA	community	Mixed methods survey + interviews	●	●	●	●		
Palumbo 2018[152]	Italy	community	Structured questionnaire	●		●			
Praska 2005[153]	USA	community	Semi-structured Telephone survey	●		●		●	
Schwartzberg 2007[154]	USA	APP + other HCPs	Questionnaire Likert scale	●		●			
Schnipper 2010[155]	USA	hospital	RCT telephone interview						●
Van Beusekom 2017[156]	Netherlands	community	Interviews thematic framework		●				
Watermeyer 2009[157]	Africa	Clinic	Semi-structured Interviews thematic content analysis			●			
Yeung 2003[158]	USA	clinic	Quasi-experimental, survey quantitative		●				

Health Literacy Knowledge by Pharmacists

Findings in this section present knowledge of health literacy in pharmacists. The section ends with a summary of the main findings.

Eight studies[16,17,135,140-142,149,150] were found and details are given in

Table *6*. Six were quantitative [16,17,135,140,141,150,], one mixed methods[142] and one qualitative in design[149]. Four studies came from the USA[135,140,141,150], two from Australia[17,142], one from the UK[16] and one study across Australia, Canada and New Zealand[149]. Publication dates ranged from 2010 to 2017.

For the setting of pharmacy in which the studies were conducted, only three studies[16,142,150] were conducted solely in community pharmacy. Other studies used all practising pharmacists[135,140,141,149] and although the profile of participants was not given it can be assumed that this may have incorporated hospital, clinic, community, industry and academia.

Of the studies reviewed, six studies[16,17,135,140,141,150] were scored by the CASP method as Category A; having high quality and low bias, while two studies[142,149] were Category B; moderate quality and moderate bias.

Only one study by Mihalopoulos[150] focused exclusively on knowledge about health literacy. The study involved community pharmacists only within the US. In this study, pharmacists had a two-hours training course to increase their health literacy knowledge and were asked to complete pre-and-post knowledge-based survey questions. Results of the health literacy knowledge-based assessment indicated that pharmacists' average tests scores increased after participation in the health literacy training course. Based on a paired t-test analysis, there was a

significant difference in pharmacists' pre-test knowledge-based test scores (mean = 69.89%, SD = 8.99%) and pharmacists' post-test knowledge-based test scores (mean = 83.75%, SD = 10.18%); t(43) = −9.00, P < .001. This study was scored as 'A' in the CASP quality assessment and was therefore high quality and low bias.

Three studies[135,140,141] addressed knowledge of health literacy in pharmacy teams, along with their health literacy interventions. Devraj et al. 2011[141] designed an instrument to assess health literacy knowledge in pharmacy by surveying, via online or mail, all practising pharmacists in Illinois, US. In Devraj and colleague's second study in 2012[140], used the reliability of the knowledge scale was determined using Kuder-Richardson-20 and Bradley-Baker[135] used the AHRQ toolkit. All three studies found that pharmacists documented that low health literacy is a problem in the US however, pharmacists were unaware of the burden of limited health literacy, had poor knowledge about the prevalence of low literacy, its relationship to years of schooling and its lack of relationship to reading comprehension. All three studies were scored as 'A' by the CASP quality assessment.

Two studies[16,17] assessed the knowledge of pharmacists in relation to mental health literacy. O'Reilly[17] reported that a total of 391 responses were received from pharmacies (response rate 19.5%) and the majority correctly identified, via multiple choice questionnaire, depression (92%) with fewer recognizing schizophrenia (79%). Pharmacists rated medicine use highly for both schizophrenia and depression, and were also positive about the use of psychological therapies and lifestyle interventions. Thus, this study concluded that the majority of pharmacists had a high degree of mental health literacy as indicated by the correct identification of, and support for evidence-based

interventions for mental illnesses. Similarly, Morral[16] reported that pharmacist respondents (n-339) recognition for the health condition was high for depression with fewer for schizophrenia and bipolar. Again, concluding that mental health literacy among pharmacists was high however, enhanced mental health content in undergraduate curriculum was suggested.

Assessment of health literacy knowledge is an essential component of health literacy practices for health professionals[140]. In the above studies, the assessment of health literacy knowledge was performed in the form of test items that participants were required to answer to determine their health literacy knowledge levels. This therefore gave an objective measurement as opposed to subjective where the participant would talk about their perceived knowledge of health literacy. Lambert[149] thus sought to explore healthcare professional's perception of health literacy knowledge via semi-structured face-to-face interviews. Twenty-nine participants were interviewed with four of these being pharmacists. The study was conducted across Australia, Canada and New Zealand and concluded that the majority of healthcare professionals where unfamiliar with the term health literacy. However, this may be an invalid conclusion to draw since the number of participants was low, considering the large geographical spread. Furthermore, due to some differences for how each country conducted their data analysis this study was rated as 'B'.

The Australian study by Duncan and colleagues[142] used 79 pharmacies to explore health literacy knowledge and awareness. Although this study used pharmacy consumers rather than pharmacy staff it was demonstrated that pharmacy staff had poor health literacy knowledge and awareness. The study reported that after training the pharmacy staff were 7.9 times more likely to exhibit health literacy communication sensitive practices ('do you have any

questions') than the control group that have received no health literacy training. However, there was no change in the use of Teach-Back method for communicating to patients.

Main Findings

Only eight studies have addressed health literacy knowledge in pharmacy with only one from the UK. The majority of studies are quantitative in nature, only one study was qualitative however, this study only used 4 pharmacists as part of the participants and was rated as 'B' in the CASP quality assessment thus, rigorous research is needed to explore UK community pharmacists' awareness and understanding of health literacy. Pharmacists had some ideas of what health literacy was, although they did not understand the consequences of poor health literacy or their role in building health literacy skills in patients. Health literacy knowledge increases after training.

Table 6. Health Literacy Knowledge Studies

Study ID	Participants	Location	Pharmacy setting	Objectives	Study design
Bradley-Baker 2011[135]	113 pharmacists in direct contact with patients (hospital or community)	USA	APP	How pharmacists assess their primary practice setting for attributes related to health literacy.	Quantitative
Devraj 2011[141]	701 practising pharmacists (could be hospital, community)	USA	APP	To develop an instrument to measure pharmacists' attitudes and barriers toward health literacy.	Quantitative
Devraj 2012[140]	701 participating pharmacies	USA	APP	To examine Illinois pharmacists' knowledge of and barriers to health literacy	Quantitative
Duncan 2014[142]	77 community pharmacies, 126 visits by patients	Australia	community	Design, develop, implement and evaluate a health literacy educational package for community pharmacy staff	Mixed Methods
Lambert 2014[149]	29 healthcare professionals including 4 pharmacists	Across Australia, Canada and New Zealand	APP + other HCPs	Understanding and perceptions of health professionals who work with Indigenous patients	Qualitative
Mihalopoulos 2013[150]	44 community pharmacists	USA	community	Assess the impact of a health literacy training course on community pharmacists	Quantitative
Morral 2017[16]	339 community pharmacists	UK	community	Examine the mental health literacy of British community pharmacists	Quantitative
O'Reilly 2010[17]	391 practising pharmacists (could be hospital, community)	Australia	APP	Assess the beliefs of pharmacists about the helpfulness of interventions for schizophrenia and depression	Quantitative

Pharmacy Involvement in Health Literacy Interventions

We have seen in previous section, twenty-three studies in which health literacy interventions have been delivered in a pharmacy setting. This next section reports on findings where the health literacy intervention in these twenty-three studies has had some level of involvement of the pharmacy team Table 7). The involvement ranged from recruiting participants, delivering the intervention to designing the intervention.

Recruitment of Participants.

Out of the twenty-three studies, five used the pharmacy team to recruit the participants[135,138,146,155,156]. Participants were recruited as they either waited in the pharmacy area for prescriptions to be dispensed, during an MUR or when purchasing over-the-counter medicines. Of the five studies where pharmacy teams recruited the participants, two were conducted in community pharmacy[138,156], one in hospital[155], one used all practising pharmacists[135] and one from a mix of community and other healthcare settings[146]. Of these five studies, three were scored as Category A; having high quality and low bias, while two studies were Category B; moderate quality and moderate bias. However, one 'A' rated study recruited participants and did not continue to contribute to the study. For example, Van Beusekom[156] used community pharmacy assistants to invite pharmacy customers into the study. Researchers then explained the study to potential participants, issued pictograms and took feedback from each participant. The pharmacy team had no other input into the study.

Delivered Interventions.

Of the twenty-three studies, ten involved pharmacists or their team in delivering the health literacy intervention to participants. The majority of studies took place in the US (7) with one conducted in the UK and one in Africa.

Hinchliffe[145] engaged with pharmacies by asking them about the health literacy intervention they have delivered. The report shows that health literacy is at the core of the pharmacists' day-to-day work. For example, Health-point Technology Kiosks based in thirty community pharmacies in Gwynedd in 2004 showed 800,000 hits in the first 12 months of installation. Better management of asthmatic symptoms and improved inhaler technique had been reported from feedback by users. In addition, a self-medication course run by Ceredigion community pharmacists for patients demonstrated a comparison of before and after questionnaires showing a significant shift of patients away from doctor consultations towards self-treatment. However, due to missing information in this study, this was rated as 'C' in the quality assessment.

A UK study[147] qualitatively tested the acceptability of the Universal Medication Schedule (UMS) tool in 15 patients with multiple co-morbidities having >5 prescription medications. The same study examined the use and need of the UMS by pharmacists and GPs therefore, considering the acceptability and impact across two different healthcare professionals. Researchers in this study found that patients had mixed feelings on how much they can benefit from the UMS. Consistent with previous research on the UMS, patients felt that they could understand their medication instructions better, especially because all the instructions were collated in a single document. Importantly, they felt that the tool would not help them in remembering the medicines. Although the UMS concept seemed to promote more patient-friendly drug labelling, which improves comprehension, medication adherence, and overall safety, time constraints in

preparing and issuing the UMS was not explored neither was which type of patients would benefit from the concept, such as elderly, young or ethnic minority.

Input into Design Idea.

Three studies involved the pharmacist or pharmacy team in some way with the design of the study. All three studies were conducted in the US, with two in the clinic setting and one using all practising pharmacists. For example, Bradley-Baker's US survey[135] was pretested and pilot tested by a group of six pharmacists specialising in ambulatory pharmacy practice from the University of Maryland Medical Centre and the University of Maryland, School of Pharmacy, as well as by six pharmacists working in community pharmacy practice. Yeung' study used a physician to invite patients into a health literacy intervention, during the patient consultation, in which the pharmacists had input into the design of the intervention.

Table 7. Pharmacy Contribution to Health Literacy Interventions

Study ID	Pharmacy setting	Intervention in pharmacy area/ environment	pharmacy contribution
Berthenet 2016[134]	community	✓	None
Bradley-Baker 2011[135]	APP	✓	R, D, DG
Burghardt 2013[136]	community	✓	None
Callahan 2013[18]	clinic	✓	D, DG, O
Collum 2013[137]	clinic	X	None
Coughlan 2012[138]	community	✓	R, O
Devraj 2015[139]	APP	X	O
Duncan 2014[142]	Community	✓	X
Gazmararian 2010[143]	hospital	X	X
Hamrosi 2013[144]	APP + other HCPs	X	X
Hinchliffe 2010[145]	community	✓	D
Johnson 2010[146]	Community + other HCPs	✓	R, O
Kenning 2015[147]	Community + other HCPs	✓	D, O
Kripalani 2012[148]	hospital	✓	D
Morrow et al 2007[160]	hospital	✓	D
O'Neal 2013[151]	community	✓	D
Palumbo 2018[152]	community	✓	O
Praska 2014[153]	community	✓	D
Schwartzberg 2007[154]	APP + other HCPs	X	O
Scnipper 2010[155]	hospital	✓	R, D
Van Beusekom 2017[156]	community	✓	R
Watermeyer 2009[157]	clinic	✓	D
Yeung 2003[155]	clinic	✓	DG
D=delivery, DG=design, O=opinions, R=recruitment			

Barriers to Implementing Health literacy Interventions

This review found four studies[140,141,142,149,150] that addressed barriers to adopting

health literacy interventions (Table 8). Overall, studies gave three specific

examples of barriers. Firstly, organisational and managerial commitment in

supporting pharmacists and pharmacy staff to support health literacy practices.

For example, Devraj[140,141], Palumbo[152] and Duncan[142] commented on the fact that

it was the decision-makers (pharmacists in charge or pharmacy managers) that

decided whether to commit to health literacy initiatives. Secondly, time

constraints were given as an issue in two studies, for example, Devraj 2012[140]

noted that 90.3% of respondents claimed time constraints to be a factor in not

implementing health literacy interventions. Finally, in four studies respondents

reported their own lack of health literacy knowledge and skills was a barrier to

providing appropriate care to limited health literacy patients.

Table 8. Studies Addressing Barriers of Implementing Health Literacy

Perceived barrier to health literacy	Reference
Lack of time	142, 141
Lack of materials	152
Lack of organisational support	142, 141, 152, 149
Lack of knowledge and skills	142, 141, 152, 149

Main Findings: Organisation, time and knowledge are the main barriers to

implementing health literacy practices.

2.4 Discussion

The present narrative synthesis was designed to identify and assess the

evidence on two principal issues. Firstly, the awareness and understanding of

health literacy in the community pharmacy setting and secondly, health literacy

interventions used to support medicine use in patients with limited health literacy

that have been conducted in pharmacy settings. What is significant in the review

is that few studies specifically focused on interventions designed to either change

pharmacists' knowledge, skills or abilities in the practice setting, or to explore the

pharmacists' perspectives about the usability and usefulness of health literacy interventions.

This review demonstrates that there are many interventions used to support patients to understand and take medicines effectively, potentially improving medication-literacy, such as written, verbal, visual and label/bottle instructions, medicine reminders and educational programmes. Many of these interventions have been tested and validated in the published literature, of which some have generated good lessons and recommendations, such as using pictograms to support verbal information and avoiding medical jargon in written and verbal communications. However, this review assessed the quality of the studies using CASP, and found some variation between studies in terms of their methodological rigour, credibility, and relevance and thus, rated sixteen studies as Category A; having high quality and low bias, twelve studies as Category B; moderate quality and bias and one study as Category C; low quality and high bias.

The lack of studies in the area, and the variable methodological quality of the studies included in the review, precluded any conclusions about the awareness and understanding of health literacy by community pharmacists in the UK and the usability of health literacy interventions within the community pharmacy setting. It is therefore recommended that further high-quality studies, particularly using qualitative methods, should be designed to investigate the perceived awareness understanding of health literacy of pharmacists, and the usability of such health literacy interventions by pharmacists.

This review also demonstrates that the majority of studies have been conducted in the US with a minimal number taking place within the UK. Furthermore,

research in community pharmacy is relatively rare, even less common are studies that seek the perspectives of community pharmacists on health literacy interventions. What is more, only one study[141] used a large number of pharmacists (n=701) to gain their perspectives of health literacy practices, although this study used all practising pharmacists and thus it could not be determined how many would be practising community pharmacists.

Although there are many available interventions to help patients with limited health literacy identified in this review, written information was featured in twelve studies with only six taking place in the community pharmacy setting. This is surprising due to the legal requirement for pharmacists to provide patients with written information about their medicines. Included in this intervention saw the development of user-friendly designs of patient information leaflets[144], self-care cards[138] or medicine charts[147], which pharmacists implemented into their practice to support limited health literacy patients. However, community pharmacists and other healthcare professionals often assume, incorrectly, that patients can read, understand and act on instructions found on medication labels[12,37,49] and health leaflets[65]. A further problem with written information is that patients are inundated with a plethora of health information. Community pharmacists provide PILs with every prescription medicine, and leaflets are displayed in the pharmacy in relation to health matters. Newspapers and magazines provide health information and the internet provides endless information about health and medicines. Regardless of this, patients with limited health literacy may find it difficult or impossible to access and interpret the many sources of health and medicines information[20,27,32,164].

Community pharmacists should be able to support patients with simple written materials that are easy-to-read. However, community pharmacists should also be

aware that to develop people's comprehension of written information, it is imperative to promote a patient-centred approach, one in which a single strategy is not assumed to fit the needs of all people[165] and thus, written information should be used in co-operation with other health literacy interventions.

There is little evaluation conducted to determine the usability of Teach-Back in UK community pharmacies, yet applying the Teach-Back method is advocated to ensure that people understand the health and medicines information being conveyed[77,78,82,83]. It is difficult to draw conclusions about its use in community pharmacy and its effectiveness due to the lack of studies; those studies that have been carried out have limitations in the study design and how the Teach-Back was implemented and assessed. Furthermore, from the review it could not be concluded how the Teach-Back method was taught to community pharmacists as a health literacy intervention concept, in order to understand how it could then be effectively implemented in a wider setting.

The majority of studies reported that pharmacists had inadequate awareness, knowledge and understanding of health literacy. The findings were not surprising as the term and concept of health literacy could be jargon to many community pharmacists since community pharmacy may not have had previous knowledge or exposure to it. Overall, evidence from the studies showed that pharmacists also do not acknowledge the consequences of limited health literacy. Pharmacists' lack of awareness of health literacy presents a huge deterrent towards building health literacy in patients within the healthcare system as a whole. The UK is seeing an increase in the use of medicines[166] to treat complex long-term conditions and this coupled with the fact that limited health literacy is prevalent in many populations means there is a need for community pharmacists

to identify and support those with limited health literacy in managing their health and medicines.

The adoption and implementation of health literacy interventions within the community pharmacy setting was reported to be hindered by a number of perceived barriers thus, the effectiveness in terms of improved delivery of health literacy intervention may be related to the pharmacists' capacity to undertake such interventions such as time, attitudes and skills. Time constraints was a factor in a number of studies that addressed barriers to implementing health literacy practices however, exact time to deliver interventions rarely featured in the studies that explored how useful the interventions were. Further rigorous research is needed to explore the time taken for community pharmacists to deliver these health literacy interventions during their busy day-to-day practice. Research is also needed in relation to the usability of these interventions within different kinds of consultations that take place in the community pharmacy setting for example, an MUR where the patient sits down for a private consultation with their pharmacist to ensure that the patient understands how to effectively take their medicines, as appose to the shorter over-the-counter brief conversation.

Lack of health literacy knowledge and skills was identified as a barrier to implementing health literacy practices. Clearly, the first steps would be to produce formal health literacy training for pharmacists that conveys the nature, scope and consequences of health literacy in relation to medicine use, together with information of how to use health literacy interventions for their limited health literacy patients. Educating pharmacists about health literacy would be an important step if they are to be better able to support their patients in medication-literacy and understanding their medicines. Furthermore, it would be a positive

move to incorporate health literacy into both under-graduate and post-graduate curricula for pharmacists.

Overall, the lack of research on health literacy interventions designed to modify UK community pharmacist's knowledge, skills and abilities demonstrates the need for this research study. The establishment of health literacy interventions suitable for community pharmacists to use, followed by assessment of their usability by community pharmacists, provides a means to prioritise the knowledge and use of health literacy interventions in the community pharmacy setting. Furthermore, the initial steps would be to determine the apparent health literacy awareness and understanding of community pharmacists and train them on the concepts of such a topic.

2.5 Summary of Chapter

This chapter has provided a narrative review the literature of firstly, awareness and understanding of health literacy by community pharmacists and secondly, the use of health literacy interventions used to support patients in medicine taking and medication-literacy conducted in pharmacy settings. Overall, there is a lack of research in the UK on both these areas and thus, demonstrates the need for this research study.

CHAPTER 3: METHODOLOGY

Chapter Overview

This chapter begins by outlining the aims and objectives of the study and then discusses the methodological foundations for the thesis. An overview of research paradigms and a rationale for the approach adopted in this study will be provided. The chapter will start by looking at the meaning of methodology and the metaphor of the 'research onion' and how this metaphor can be used to discuss paradigms. The chapter describes each layer of this onion, such as research philosophies, approaches, strategies and time horizons. The chapter will also discuss the ontological, epistemological and reflexivity considerations guiding the development of the research.

3.1 Study Aims and Objectives

The aim of the main study emerged from the best evidence literature review on health literacy awareness and understanding, and the use of health literacy interventions in community pharmacy. The outcome of the review was fully discussed in the previous chapter. Most health literacy research has focused on patient skills and abilities and on interventions designed to improve those skills and abilities, with many health literacy interventions being identified for example, written, visual, verbal, reminder aids and educational programmes. However, there is a lack of research on health literacy interventions designed to modify UK community pharmacist's knowledge, skills and abilities.

There is growing recognition that health literacy depends not only on individual skills and abilities but also on the demands and complexities of the healthcare system and the ability of healthcare professionals to assist patients with limited health literacy. This has been discussed in depth in chapter 1. It is of primary importance therefore, to develop health literacy strategies and interventions that healthcare organisations and healthcare professionals, such as pharmacists, can use, firstly, to improve their awareness and knowledge of health literacy and secondly, to help build health literacy skills of their patients.

Training programmes to educate healthcare professionals on the topic of health literacy and its consequences are one such strategy. A second strategy is in the form of health literacy interventions, which are readily available resources to be used by healthcare professionals to help address the health literacy needs of patients. Whilst, only limited studies have used these interventions for the pharmacy profession, these are used more widely in other countries, such as the US. The literature review indicates that such interventions have not been tried and tested for use in UK community pharmacies. With this in mind, aims for this study were to;

> Explore community pharmacists' awareness and knowledge of health literacy, develop and evaluate a training course then understand the usability of health literacy interventions within their everyday practice.

The following objectives were set;

1. Explore community pharmacists' apparent current awareness and understanding of health literacy (Phase One)

2. Determine key health literacy interventions that could be used within community pharmacy (Phase Two)

3. Develop, deliver and evaluate a pharmacy-specific training programme to address health literacy awareness and introduce health literacy interventions (Phase Three)

4. Explore community pharmacists' perspectives on the usability of health literacy interventions in practice. (Phase Four)

3.2 Research Design

There are many different definitions of research methodology. Gardner[167] define it as a logical approach to undertaking the research, and a set of activities or methods that will facilitate the collection and analysis of data relevant to the issue under investigation. Similarly, Creswell[168] termed it as strategies of inquiry. However, Yin[169] points out that there are no specific rules with which to select tools to undertake the research, rather the scope of the research, the source of the data and the research question will depend upon the choice selected. Nevertheless, research methodology is a way to systematically solve a research problem,[170] with the scope of research methodology being wider than that of research methods. Thereby, methodology refers to the science of methods used to gain knowledge about the world or reality.

Saunders[171] used the metaphor of a 'research onion' to help formulate an effective research methodology. Consisting of six layers, the external layer is the research philosophy, the second layer the research approach, the third the research strategy, the fourth the choices made, the fifth the time horizons and the final layer the data collection and analysis. This 'research onion', represented in

Figure 9, is now discussed in order to explain why each element was selected, and how this assisted in addressing the research aims of this present study.

Figure 9. Research Onion
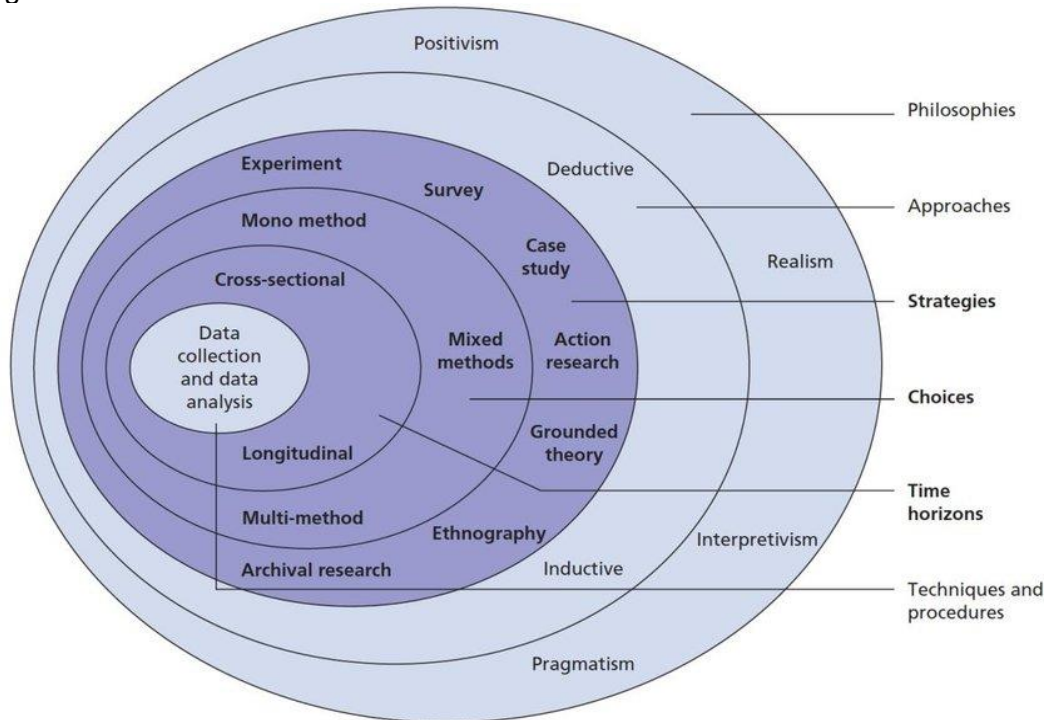
Taken from Saunders et al[171]

3.2.1 Research Philosophy

Research philosophy deals with the source, nature and development of knowledge and how the researcher may view the world[171]. In other words, researchers' decisions and actions are guided by their view and understanding of the world. Therefore, the researcher will have their personal view of what constitutes acceptable knowledge, and the process by which this is developed, which gives direction to the way they decide to conduct their research study. Saunders[171] notes that there are two main research philosophies or paradigms namely, positivism and interpretivism. Positivism, holds that the world is largely

objective, scientific and experimental and so believes there is a single truth that

can be. In this case, the researcher would adopt a positivism paradigm

expressed through a quantitative method.

In contrast, interpretivism, holds that the researcher sees the world and reality as

largely subjective and socially constructed[171]. Hence, words are able to indicate

nuances more accurately[171] thereby, the researcher would use interpretivist

paradigm expressed as a qualitative method. In Table 9 Easterby-Smith et al[172]

summarises the differences between positivist and interpretivism philosophies.

Table 9. Differences of Positivism and Interpretivism

	POSITIVISM	INTERPRETIVISM
The observer	Must be independent	Is part of what is being observed
Human interests	Should be irrelevant	Are the main drivers of science
explanations	Must demonstrate causality	Aims to increase general understanding of the situation
Research progresses through	Hypotheses and deductions	Gathering rich data from which ideas are induced
concepts	Need to be operationalised so that they can be measured	Should be incorporate stakeholder perspectives
Units of analysis	Should be reduced to simple terms	May include the complexity of whole situations
Generalisation through	Statistical probability	Theoretical abstraction
Sampling requires	Large numbers selected randomly	Small numbers of cases chosen for specific reasons

Taken from Easterby-Smith et al[172]

Constructivism is where each individual constructs their own knowledge and

interpretations of the world, therefore, suggesting that reality is achieved through

the perceptions of individuals as they interact. That is to say, people develop

subjective meanings of their experiences of the world they live in. Hence, the researcher searches for complexity in meaning and multiple truths that exist within a context and are constructed by and between people.

Ontology is a philosophical belief system what constitutes reality and how can we understand existence?[173]. Or to put it simply, the philosophy or nature of reality and the nature of human beings in the world. The view adopted in this research is that there are numerous views of the world, each constructed by individuals, and nothing is certain such as, the real world is socially and discursively constructed and that, amongst other things, what we observe affects our experience. Hence, the social construction of reality is subjective.

Epistemology is concerned with the theory of knowledge and how it may be acquired[173]. This philosophy is most commonly used in scientific research as it searches for facts and information that can be proved without doubt, rather than changeable situations and opinions ie. the subjective view. In this case, how knowledge is generated and how it can answer the research question. In taking a constructivist position in this research, it is acknowledged that knowledge is subjective, because it is socially constructed and community pharmacists will construct knowledge and reality through their own experience and interaction with the environment. Thus, within this context, community pharmacists' stories and beliefs will form legitimate knowledge[174]. However, it should be noted that knowledge continues to adapt to the experiential world we encounter[174]. Thus, alternative views from community pharmacists in relation to health literacy will develop and continue to influence the realm of pharmacy throughout that professional sector.

The epistemological position is reflected in the aims and objectives of this study, seeking to explore community pharmacists' experiences. Interacting with community pharmacists is taken to be a way of gaining access to meaningful accounts of their subjective knowledge and experiences with regard to health literacy. In order to gain this insight, there would need to be an interaction with the community pharmacists, allowing them to describe their experiences. One way of gaining such insights could be via the interview process. Interpretivism requires the researcher to become an active participant in the research, and not to act as a remote and passive observer[172]. This involvement of the researcher in subjective research allows the researcher to move closer to the actors' viewpoints through the use of interviews, observations, journal logs and diaries. However, it is essential that the researcher acts within the frame of reference of the dynamic, subjective world being researched[175], therefore, the phenomena under study is described from the individual's perspective, as interpreted by the researcher, thereby, seeking to gain an understanding of the world in which we live and operate.

Reflexivity

Reflexivity has become a common element of qualitative research, with much written about its importance in validating and legitimising qualitative research[176]. However, library searches, using 'reflexivity' as a keyword, yielded literature about terms, such as 'self-reflection', 'reflexive' and 'critical reflection'. Such multiple terms can be confusing and interchangeable and suggests that reflexivity may be a vague concept, seeming to defy precise definition. This was also noted by Atkinson and Coffey[177], who described it as 'being a term that is widely used, with a diverse range of connotations, and sometimes with virtually no meaning at all'[177]. Similarly, Finlay and Gough[178] consider reflection and reflexivity as a

continuum, with reflection at one end, meaning thinking after the event and reflexivity at the opposite end, meaning a continued self-awareness. Another definition, offered by Rice and Ezzy[179] is that it is 'An acknowledgement of the role and influence of the researcher on the research project. The role of the researcher is subject to the same critical analysis and scrutiny as the research itself' [179]. In other words, reflexivity is about the researcher continuously reflecting on how their own action affects, influences or impacts upon the data collection and analysis of that data.

According to Scott[180] the increasing emphasis on reflexivity has challenged researchers to write themselves into the research story. Furthermore, as Savin-Baden[181] states reflexivity is about situating oneself throughout the research process. In order to deal with this, a reflexivity account can be used throughout the research process, with the help of a detailed reflective journal of the researchers background, assumptions, positioning, feelings and behaviour[178] during the research process to help develop a self-awareness and ability to critically evaluate the researchers stand point within the research journey.

In order to undertake the reflexive process various frameworks have been offered to operationalise the practice [182,183], with many theorists have emphasised the need to include emotions towards offering a more critically reflexive account of research practice. Doucet's metaphor of gossamer walls[184] focuses on researcher's emotions. One way of thinking about oneself as a researcher would be in terms of the gossamer walls and looking behind the walls into one's own life and history. The three areas or research relationship are; relationship with ourselves and the considerations of ghosts (past history) that haunt us, relationship with respondents and relationships with readers. However, despite the many frameworks available in general, reflexivity has two key elements.

Firstly, an understanding of the researcher's positionality and secondly, an examination of that positionality affecting the research process and its outcomes.

With this in mind, it was important for me to consider two key issues with my positionality in the present study. Firstly, how might interview participants view and make sense of my identity and professional status, in other words, the relationship between myself and the participants during the face-to-face interviews. Secondly, how my professional background and knowledge of health literacy could influence the direction of interviews and analysis of those interviews. An account of how reflexivity was applied to this present study is presented in chapter 9.
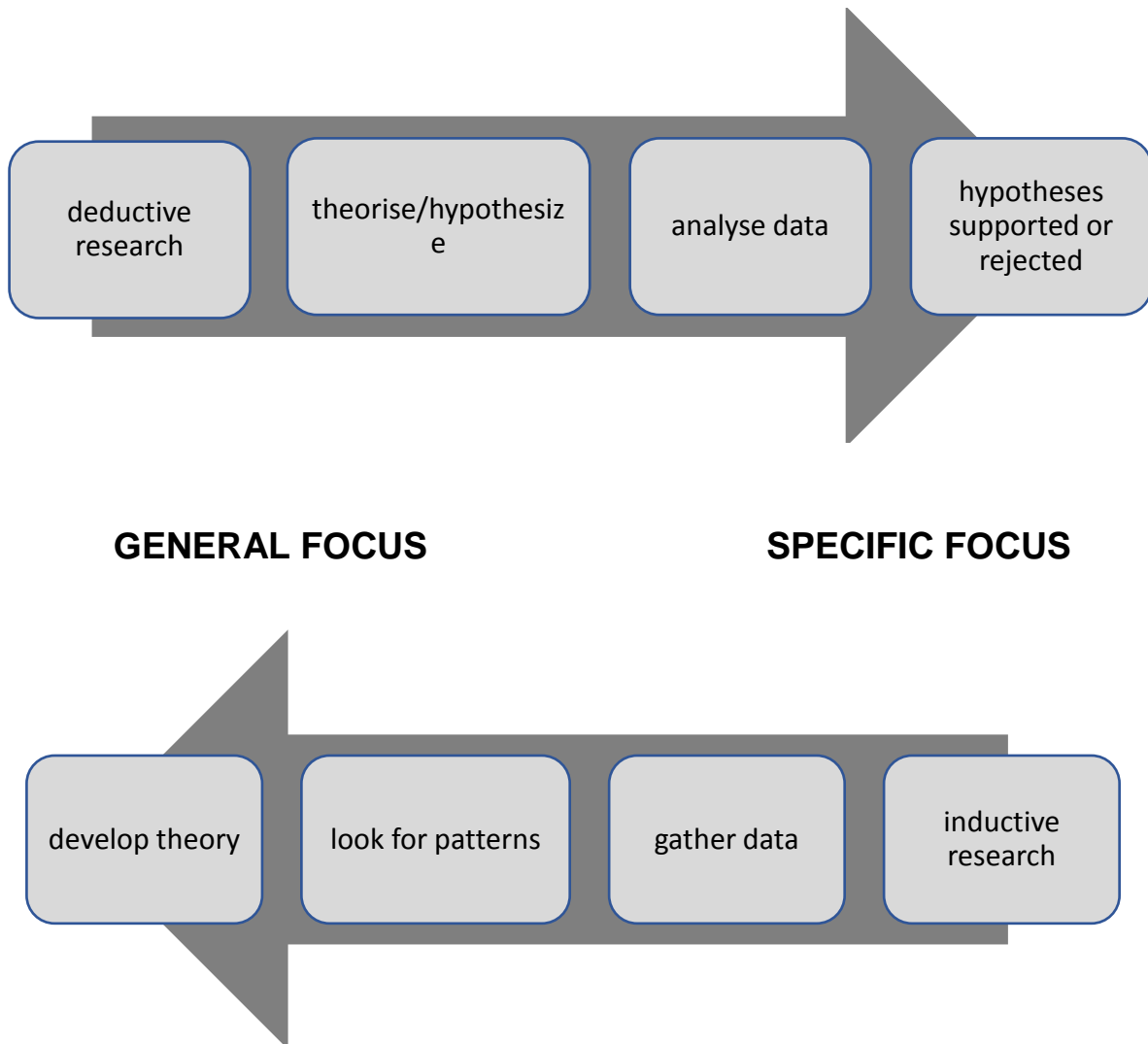
3.2.2 Research Approach

Research approach is the second layer of Saunders's research onion[171]. According to Saunders[171] the are two main types of research approach, namely deductive and inductive. A deductive approach to research is the one that researchers typically associate with scientific investigation. The researchers will start with a theory and then test its implications with data. On the other hand, with the inductive approach the researcher starts by collecting data relevant to the topic, then looks for patterns in the data and works to develop a theory that could explain those patterns. Thus, the researcher develops a theory as the results of the data are analysed. Figure 10 shows this process in a diagrammatic way.

In line with the constructivist philosophy of this present study, Cohen[175], Berger[185], Nueman[186] and Patton[187] define qualitative research as an interpretative, constructivist approach to subject matter, a field or to reality. They describe the role of the researcher in qualitative research as one to describe patterning characteristics of people or events in reality. This is carried out by

reaching an in-depth understanding of the subject matter to guide broader interpretation of a social phenomenon or particular experiences and views of groups of participants.

The focus for this study was to explore the community pharmacists' current awareness and understanding of health literacy and the usability of health literacy interventions. In this instance, qualitative research can be particularly useful in examining the insights of community pharmacists as to what shapes their behaviours. The qualitative approach for the present study would allow the researcher to be receptive to new ideas and issues that emerge allowing the identification of pharmacists' ideas, feelings, knowledge and even fears of healthy literacy interventions. However, in line with the constructivist approach it will also allow exposure of new knowledge to emerge. Therefore, a qualitative research approach, appears to be most applicable in this study where the researcher will follow an inductive approach, moving from specific, in-depth, discussions with participants to broader interpretation and theories. Furthermore, the narrative of the collected data can then be used to develop concepts and theories, enabling a better understanding of the social reality related to this present study.

Figure 10 Deductive and Inductive Approaches

| deductive research | theorise/hypothesize | analyse data | hypotheses supported or rejected |

GENERAL FOCUS   **SPECIFIC FOCUS**

| develop theory | look for patterns | gather data | inductive research |

3.2.3 Research Strategy

In previous sections the 'research onion' was introduced as a way of representing the issues underlying the choice of data collection methods, peeling away the outer two layers of research philosophies and research approaches. The third layer of the research 'onion' from figure 3 reveals research strategies. Saunders et al[171] states that having a research strategy is important in helping the researcher meet the study aims and objectives. On a similar note, Bryman[188] identified a research strategy as "a general orientation to the conduct of research" (pg698). According to Priola[189] there are four main types of research

strategy: case study, qualitative interviews, quantitative survey and action-oriented research (Figure 11).

Figure 11 Main Research Strategies

Case
study

Quantitative
survey

Research
questions

Qualitative
interviews

Action
research or
action-oriented
research

Taken from Priola[190]. Understanding Different research perspectives.

From these various strategies, this present study sought to adopt the qualitative interviews as the appropriate strategy for research. Neuman[186] indicates that communication techniques, which can extract feelings, opinions, meaning and knowledge, form a crucial part of qualitative research methods. Thus, one such method that can potentially contribute significantly in helping me to understand community pharmacists' awareness of health literacy and the usability of health literacy interventions is during face-to-face interviews, which would allow for exploration of the 'what', 'how' and 'why' questions. Therefore, the use of face-to-face interviews satisfies the selection methods most relevant for this study. Type of face-to-face interviews and their justification in this study are discussed further in chapter 4.

On the basis of the above discussion, face-to-face interview research strategy has been selected as the most appropriate to answer the following questions of this present study.

- What is the current awareness and understanding of health literacy by community pharmacists?
- Could community pharmacists use health literacy interventions in their day-to-day practice?

3.2.4 Research Choice

The fourth layer of Saunders et al.'s research 'onion' model refers to research choice. It is acknowledged that the nature of study could be categorised into three major elements; qualitative, quantitative or the mix of both qualitative and quantitative. As this present study is aimed at measuring the experience, perceptions or the other elements of community pharmacists, that cannot be measured in terms of numbers, then it is justifiable to the qualitative nature of the study.

3.2.5 Time Horizons

The fifth layer of the 'research onion' is known as the Time Horizons. According to Saunders et al[171] time horizons are needed for the research design, independent of the research methodology used. There are two types of time horizons, namely Longitudinal and Cross-sectional. Longitudinal studies are repeated over an extended period; cross sectional studies are limited to a specific time frame.

This present study had some time constraints, and so data needed to be collected over a short period of time before analyses and interpretation. Thus, a cross sectional study was undertaken.

3.3 Summary of Chapter

This chapter has presented the rationale for the research design, approach and strategy using the 'research onion' metaphor. It has also discussed ontology, epistemology and reflexivity. The final layer, techniques and procedures, are now discussed in the following methods chapter.

CHAPTER 4: METHODS

Chapter Overview

Methodology was discussed in chapter 3. This chapter will now present the final layer of Saunders's research onion; data collection and analysis. The chapter will therefore describe the approach towards participant sampling, recruitment, data collection and data analysis for all four phases of the study

4.1 Introduction

To reiterate, the four objectives and thus phases of this present study were;

1. Explore community pharmacists' apparent current awareness and understanding of health literacy (Phase One)

2. Determine key health literacy interventions that could be used within community pharmacy (Phase Two)

3. Develop, deliver and evaluate a pharmacy-specific training programme to address health literacy awareness and introduce health literacy interventions (Phase Three)

4. Explore community pharmacists' perspectives on the usability of health literacy interventions in practice. (Phase Four)

The sections of this chapter are set out according to each phase.

In Phase One semi structured face-to-face interviews were used to collect the data that informed the apparent awareness of health literacy in community

pharmacists. Thus, development of the interview guides is discussed in the data collection section, and an example of the coding process, the construction of themes and subthemes, linkages and grouping, model construction and theoretical development in the data analysis section.

For Phase Two, a Nominal Group Technique (NGT) was used and so the chapter discusses the panel size, consent and meeting structure.

For Phase Three the instructional design for the training session are discussed.

For Phase Four semi structured face-to-face interviews were used to collect the data that informed and the usability of health literacy interventions in day to day practice. As with Phase One, the data collection and coding process are discussed.

4.2 Ethics Approval

Ethical approval was granted by The School of Pharmacy Research Ethics and Governance Committee at Keele University (appendix 2).

4.3 Phase One

4.3.1 Background Justification of Semi-Structured Interviews

Interviews are integral to interpretivist research, and were considered to be the most appropriate method for exploring community pharmacists' experiences within their practice. It has been argued in the past that the healthcare sector has

failed to capture the types of information needed to inform healthcare practice[190] , however, interviews are now widely used in healthcare research to help to capture and understand what people do, believe and think[131].

Interviews can be conducted face-to-face or over the telephone, and can take a variety of formats, including unstructured or semi-structured. Structured interviews have been criticised for not recognising the participants' views appropriately, however, it is argued that the flexibility of semi-structured interviews allows for the generation of rich and illuminating data[168,191,192], which is particularly suited to studies that are investigating new ideas. In conducting a semi-structured interview, the interviewer, based on their own perceptions, has the flexibility to adapt the order in which questions are asked, and the way that they are worded. Additionally, the interviewer can insert extra questions, should further probing of an idea be required, or a question can be left out if it is regarded as inappropriate, in order to enhance the context of the conversation. However, it is vital that researchers use a good interview technique. This is discussed later in this section.

Another possible way of seeking to understand Pharmacist' apparent awareness and knowledge of health literacy would have been to carry out telephone interviews. However, Robson[193] argued that the benefits of interviews can be strengthened by conducting them in a face-to-face manner, where the interviewer has the ability to respond to the participants' non-visual cues or other responses, by modifying their questions appropriately. Furthermore, the interviews were expected to last approximately one-hour and this length of time may have been difficult for telephone interviews, as they tend not to be acceptable to participants[194], and thus tend to have early termination by the participant[195]. Additionally, it was anticipated that most interviews would take place during the

pharmacists' working day and telephones may be situated in the dispensary. As a result, a telephone conversation could be within ear-shot of other pharmacy staff. Hence, it was felt that pharmacists may not be able to fully express their opinions and even refuse to answer complex questions, due to the concerns of being overheard and not able to answer in a confidential environment. As a result, it was felt that telephone interviewing would not be able to produce such an in-depth discussion needed for this study.

4.3.2 Sampling Strategy

Purposive sampling was used in this study, whereby, it focused on particular characteristics of a population that are of interest to the study and thus, enabling me to answer the research questions. As the purposive sample were all registered community pharmacists this provided a homogenous sample, as they equally worked in a variety of pharmacy settings such as rural, supermarket, town centre etc. thus, providing a range of perspectives in patient care. Furthermore, it may be viewed that this sample is broadly representative of the community pharmacist population in terms of gender, ethnicity, locum, part time, manager or owner. Those invited to take part in the study were specific pharmacists; community pharmacists.

The selected geography of the community pharmacy settings was purposive in that the researcher's place of work covered the majority of the area. Thus, as explained in chapter 1, I have an insight into many of the community pharmacists working the area, and so I could then ensure the diversity of participants' backgrounds when considering the recruitment of community pharmacists, to ensure that the phenomena investigated would be seen from the different perspectives held by the diverse population of the study sites.

Phase One aimed to recruit approximately 20 participants initially. Once interviews and transcribing had taken place, if saturation had not been achieved, recruitment would continue until saturation was achieved. Although McCracken[196] recommends no less than eight interviews suggesting that very large numbers of participants could hinder the researcher's ability to effectively analyse large amounts of data conversely, many other scholars recommend interviewing until data saturation is achieved[175,191,192,197].

Pre-registration pharmacists, working under the supervision of a qualified registered pharmacist, were excluded from this study. It was anticipated that these participants would not be counselling many patients on their own and may not yet have the experiences this study was looking for.

4.3.3 Recruitment and Consent

Community pharmacies, within Stoke-on-Trent and Staffordshire were sent an envelope containing an invitation letter, consent form, participant brief (Appendix 3) and a prepaid self-addressed envelope. Within two weeks seven community pharmacists had replied, by email, to consent to take part in the study and so a date, time and venue was confirmed with each one. A further invitation letter was sent whereby an additional 12 community pharmacists replied and were recruited.

4.3.4 Data Collection

The interview guide for Phase One (appendix 4) was developed to ensure that the key areas of exploration were included, and also to serve as a reminder and prompt for the researcher when conducting the interviews. Due to the iterative approach to this study, the interview guide underwent some development over the period time of the study to ensure emerging issues, from the ongoing interviews, were included. The interview guide consisted of eight open-ended questions which broadly addressed the main topics of: A) understanding the experiences that community pharmacist may have with patients who are confused with medicines, B) community pharmacists understanding and awareness of health literacy and patients with limited health literacy and C) to seek acceptance and ideas about training sessions for pharmacists on the topic of health literacy.

The interview guide used in the initial study (initial study is discussed in section 1.10 (appendix 5) underwent some changes, as in these initial interviews, participants tended to focus their conversations around the experiences with patients' confusion with medicines, at the expense of other important points, such as population of people most at risk and what health literacy meant for them as a community pharmacist.

Informed consent was received from each participant prior to commencing each interview. The interviews carried out used the cycle approach described by Ritchie[198], which emphasises a number of tasks the researcher uses to move through the stages of an interview. For this present study, stages started by easing the pharmacist into every day, informal, social interaction and rapport development. After this 'conversation style'[197] interaction, there was a move towards a more focused and understanding of the specific topic. During this

stage there was specific skills to be adopted, such as active listening, using open-ended questions, probing to explore answers further, paraphrasing to elicit more robust and detailed confirmation and managing silences by not filling them. Towards the end of the interview there was a return to the everyday, informal, social interaction, which helped to signalled the end of the interview. More information on Ritchie's cycle in relation to this study can be found in appendix 6.

The interviews therefore generated conversations and the data produced is textual in the form of verbatim transcripts of recordings of the conversation, hand written notes and reflection notes produced after the interview. Thus, all interviews were digitally recorded and then the recordings were transcribed verbatim. I personally transcribed each interview which allowed me to immerse myself and have a close interaction with the data and to start the process of analysis. As recommended by Dovey-Pearce[199], data collection followed an iterative process whereby transcribing and analysis happened as soon as possible after each interview took place and before the next interview. Thus, helping refine further interviews and introduce new questions, if needed.

4.3.5 Data Analysis

As with all qualitative research, the data analysis in this phase of the research started while data collection was going on. After a few individual interviews were conducted, preliminary analysis was conducted following an inductive process.

In the present study, the analysis used was framework analysis. This approach provides the advantage of obtaining information directly from the participants. Hence, the overall aim of the analysis was to understand the complex meanings in the participants psychological world. In order to develop this understanding, I

would read and re-read word by word the interview transcripts several times and then capture key thoughts and concepts. For this present study, this was achieved by following systematically, methodical approach in which I could avoid having preconceived ideas that could be imposed on the process of analysis with the use of already set concepts guiding analysis[200].

Framework analysis was chosen for the following reasons[201]

1. It provides coherence and structure to otherwise cumbersome, qualitative data for example the interview transcripts.

2. It facilitates systematic analysis, thus allowing the research process to be explicit and replicable.

3. Despite the inherent structure, the process of abstraction and conceptualisation allows the researcher to be creative with the data.

I started the first stage by writing down, in the left-hand margins on a transcript, any comments about the text whilst reading it carefully and fully. These comments could be first impressions, observations, links to other comments or themes, reflections or summaries. However, some comments and reflections were getting complex and lengthy due to me wanting to capture key thoughts about the participant's accounts and link themes with other interviews and current ideas. Therefore, I decided to write a separate reflexive account for each participant interview. In the reflexive account, preliminary narratives about the participants ideas were included as well as my observations, impressions and thoughts. No rules followed on how to structure and what comments to make in this reflective account, it was purely my own narrative of ideas and observation, some which were grounded in the data and some which were not. One advantage of these reflective accounts was that they allowed me to immerse

myself in the data. An extract from one reflective account can be found in appendix 7.

Once the whole transcription of one interview had been commented upon then I re-read again and identified initial codes or labels that emerged. These were usually at a slightly higher level of abstraction and even included psychological terms in some cases. These tend to be noted on the right-hand margin of the transcript. Next, I listed these codes in chronological order, based on the order in which they emerged in the text. This list then provided me with a basis for grouping the themes under different subthemes[202]. Thus, in the present study, a list of themes together with its representative quote for each theme was prepared. An example from one transcript with its list of themes and quotes is presented in appendix 8.

In the third stage, I attempted to find connections between the themes and in doing so grouped them under different main themes[202]. For this stage, I printed each theme with corresponding quote and cut into strips of paper. Next, these strips of printed paper were organised and grouped together under different subthemes. As a result, it ensured that the themes and subthemes were grounded into the participants words.

As the analysis continued these themes were reviewed again as new themes emerged from other participants accounts. Furthermore, these themes were reviewed by my research supervisor and continuous discussions about the integration of themes and subthemes took place. The above stages were completed for the first transcription and I then continued the same with the next transcription, aiming to identify similar patterns, as well as new ones that emerge

from each participants account. This was an iterative process of reviewing earlier transcripts in the light of new themes that emerged.

4.4 Phase Two

4.4.1 Background Justification for Nominal Group Technique (NGT)

One mechanism of producing information in areas where published material is Inadequate is to use a structured process which harnesses the experiences, skills, or feelings of appropriate experts. These methods are termed consensus methodologies[203], which include NGT and Delphi techniques.

For the present study, the constructivist paradigm was adopted, as explained in chapter 3. Denzin and Lincoln[204] used a number of aspects to describe and explain the constructivist paradigm, one of which is the nature of knowledge. In the present study, it was understood that knowledge is individually constructed and the viewpoint of each participant was considered when exploring the aspects being investigated. Thus, consensus was sought with the use of NGT in Phase Two of the study, allowing for construction of what is seen as real by the health literacy community. This corresponds to the constructivist paradigm as described by Denzin and Lincoln[204]. Furthermore, NGT provides insights into the perceptions and constructs individuals use to understand and manage their world[205]. What is more, NGT assures a balanced input from all participants and takes advantage of each person's knowledge and experience, again consistent with the constructivist paradigm of the study.

NGT is a research method developed by Van de Ven and Delbecq in 1971[203]. It is a structured, face-to-face meeting, consisting of four key stages: silent generation, round robin, clarification and voting or ranking. Thereby, a systematic procedure of brain storming takes place to collect qualitative information and

views from participants. The participants are a group of experts who have insight into a particular area or topic. The first stage of this systematic process is that the group is presented with a question and each expert records their ideas independently and privately in the silent generation session. In other words, each expert will have time and space to reach individual contributions[206]. Experts then share their ideas in round robin feedback session, sharing one idea at a time until their ideas are exhausted. The experts will then have an opportunity to vote and rank the ideas.

NGT can be compared with other consensus methods, such as the Delphi technique. The Delphi technique, although highly structured, is a relatively isolated thinking and communication process among group members not providing the combination of individual thoughts, expressions, and experiences through a group discussion, which is offered by the NGT. The alternative to the NGT would have been to have rounds of the Delphi until no changes in responses were noted. However, it is recognised firstly, that NGT groups make more accurate judgments than Delphi groups[207,208]. Secondly, that responder fatigue occurs with increasing rounds of the Delphi[208], and a lower response rate has the potential to lessen the validity of results. Additionally, if an item achieves low consensus because of ambiguity or lack of understanding by the panel, there is no opportunity in repeated Delphi rounds to seek clarification. Hence, the clarification and discussion process found in the NGT is, again, not easy to achieved in a remote Delphi process. What is more, face-to-face contact and discussion, offered by the NGT, is an aspect that is embedded in the constructivist paradigm adopted in the study.

Phase Two of this study did not need to have considerable time spent on it and thus, another advantage of using the NGT is that it requires little time to run.

Although the time to complete one NGT is variable, and depends on group size and how many questions are asked, the session usually last approximately 2 hours[209]. For this present study this was a consideration, since the panel involved very busy professionals. In contrast, the Delphi method can often take up to four months for three rounds to be performed[208].

Additionally, NGT requires few resources to run. The resources, for each stage of the NGT process, are shown in Table 10. Furthermore, prior preparation by participants is minimal, this was a significant consideration in this study as the expert panel may have been reluctant to take part, if research or pre-reading was needed prior to the NGT.

Table 10. Resources Needed for NGT Meeting

Resources needed	Reasons
Participants	Members of the Local Stoke-on-Trent City Council health literacy steering group
Venue	Centrally located, ease of parking and little or no cost, large enough to accommodate the group
Tables	In horseshoe style for ease of facilitation
Paper with question on	One well-focused question, to be placed on the wall '"Which interventions for health literacy do you think could be used by community pharmacists in their day-to-day practice?"
Consent, participation information	For participants to sign and re-read if appropriate
A4 sheets with question on	Post-it notes could also be used. In this study, A4 sheets with the question on each sheet was used
Pens	For participant use
Blue tac	To stick answers to the wall for all participants to view
Ranking forms	To allow the participants to vote
Flipchart paper	To write the ranking and final votes on
Calculator	To add up the ranking score
Audio recorder	To record the session and transcribe afterwards

In essence therefore, the NGT and Delphi Technique are both consensus methods that involve a group of 'experts' to generate ideas and determine priorities. The NGT was deemed appropriate for this study in serving two important purposes for this study: allowing discussion and clarification of health literacy interventions, and providing an external review of the available health literacy interventions that could be used by community pharmacists.

Further justifications for using the NGT in the present study is now discussed in relation to using the technique in other healthcare studies, including pharmacy. The NGT has been used in many studies of healthcare[210-212]. Potter et al[210] identified up to 200 articles on NGT that had been published between 1966 and 2004 across the healthcare profession alone. Recently, NGT has been used within pharmacy and general practce to explore such concepts as the appropriateness of long-term prescribing[213], addressing recruitment issues in hospital pharmacy[214] and patient-centred healthcare professionalism in community pharmacy[221] (Table 11). What is more, a UK study by Bissell[216] used NGT to develop a criteria to measure the appropriateness of advice given by community pharmacists. In another UK study, Bradley[217] used NGT to develop a priority list of activities pharmacy support staff could perform during a pharmacist's absence. Both studies found NGT to be an excellent process in generating and clarifying ideas, and providing a voice to all participants.

Gastelurritia[218] used the NGT method to help identify and prioritise practice change in community pharmacy. What is more, Bissell used a multidisciplinary panel in their NGT to utilise and build upon expert opinions which, it has been suggested, should be called upon "whenever it becomes necessary to choose among several alternative courses of action in the absence of an accepted body of theoretical knowledge that would clearly single out one course as the preferred

alternative" [219](p. 11). This is similar to this phase of the present study, in which I am seeking to understand the what of health literacy interventions community pharmacists could use, as it is hoped that the experts will prioritise these interventions into the top five.

Table 11. Examples of NGT Used in Pharmacy

AUTHOR	AIM		
	Develop criteria or guidelines	Generate ideas	Problem solving
Bissell et al[216]	✓		
Bond and Watson[220]	✓		
Bradley et al[217]		✓	
Cantril[214]		✓	
Gastelurrutia et al[218]			✓
Hutchings et al[221]		✓	
MacKinnon[2015]			✓
McMillan et al[222]		✓	
Tully and Cantrill[223]	✓		

In this present study consensus from experts was sought to help generate a list of health literacy interventions that could be used by community pharmacists in the UK.   The top five interventions developed from that NGT will be utilised in Phase Three of the study for pharmacist to learn about and then in Phase Four of the study where community pharmacists will use them and report on their findings.

4.4.2 Sampling Strategy

No criteria exist for who should be included as panel members on a NGT, except that each must be justifiable as in some way as an `expert' on the matter under discussion[224]. Thus, for the purpose of this study participants for the NGT where

sought from the local Stoke-on-Trent City Council Health Literacy Steering Group, as it was anticipated that the knowledge and expertise of these participants would be fundamental in producing a comprehensive picture of health literacy interventions.

It has been suggested that NGT groups should not exceed ten to twelve participants[225] with the most favourable sample size in the range from five to nine participants[208]. Thus, seven participants from the local Stoke-on-Trent city Council Health Literacy Steering Group where invited to take part.

4.4.3 Recruitment and Consent

Participants for the NGT were sent an email that included an invitation letter, information sheet describing the aim of the study and consent form, similar to that used in Phase One (appendix 3). Once they replied to accept the invitation, they were sent another email to arrange the date, time and venue.

4.4.4 Data Collection

NGT has five key stages to the session: silent generation, round robin, clarification, voting or ranking and reporting[208]. This study used these five stages, and in addition, an introductory stage in which participants were given a brief verbal presentation, with the aid of a PowerPoint presentation on the research project. In the introduction stage participants were told they would be offered a pre-prepared list of health literacy intervention that I had researched for them. (appendix 9). An overview of the NGT meeting structure in relation to this study can be found in Table 12

Table 12. Overview of NGT Structure

Task	Time (minutes)	By whom
Introduction to the Meeting and discussion of pre-prepared list of health literacy interventions	10	facilitator
Stage 1 – silent generation	25	participants
Stage 2 – round robin	25	participants
Stage 3 – clarification	30	participants
Stage 4 – voting and ranking	20	participants
Stage 5 – reporting on votes	10	facilitator
Total time	2 hours	

During the introduction stage the following research question was presented to the panel: "Which interventions for health literacy do you think could be used by community pharmacists in their day-to-day practice?" The following stages then took place;

Stage 1 – Silent Generation

I gave 25 minutes for participants to record their individual ideas, privately, in response to a question. They were asked to write one individual idea per A4 sheet of paper provided and writing as many ideas as they could identify. This stage was completed with no talking from participants, and so I ensured that silence was kept and prevented any discussion taking place.

Stage 2 – Round Robin

I next collected the written ideas using the round-robin approach. Thus, asking each participant, in turn, to state one single idea to the group. This round robin

was continued until there are no more ideas. No discussion or explanation of ideas took place at this stage. Each A4 sheet was posted onto a large wall within the room.

Stage 3 - Clarification

When all the ideas had been collected, a structured discussion was held. This clarification stage provided each participant an opportunity to clarify what was meant by the ideas they had given. During this stage, I allowed the group to eliminate duplication, alter similar ideas, clarify and eliminate any misunderstandings.

Stage 4 – Voting and Ranking

This was completed by the participants prioritising the ideas presented in stage 2. I used a ranking sheet (appendix 10) of the top 10 ideas with the most important being 1 the least important being 10. This stage is confidential, in that each participant does not see how others rank the ideas. I then scored the ranking.

Stage 5 – Reporting on Votes

In this stage, I reported to the group the ranking order for the interventions. The ranking showed order of importance of the interventions as chosen by the participants. The highest ranking through to the lowest was shown. The top five would be those taught to community pharmacists in Phase Three, and used by community pharmacists in Phase Four of this study.

As the facilitator, I kept to the time assigned for each step and ensured that the structure of the NGT was followed. Additionally, I also ensured that equal opportunity and time was allotted to each participant to ensure fairness and effective participation by all group members. Finally, and most importantly, I participated neither in generating ideas nor in the discussion stages of the meeting, as my role was purely to manage the meeting.

4.4.5 Data Analysis

Scores were added up for each idea, and the ideas were ranked with the highest total score first, producing a list of the groups top 5 health literacy intervention ideas. In addition, the meeting was audio recorded and all papers were collected after the meeting to ensure the relevant questions and resultant answers were captured and translated accurately. Audio recordings were transcribed verbatim for the purpose of sense checking the data gathered through the group interactions. Quotes from participants could be extracted from the transcripts to help explain both individual and group thinking.

4.5 Phase Three

4.5.1 Training Session Development

This next section traces the development of the training session for Phase Three and covers the design, and justification that underpins the rationale. The instructional design involved in the development of a training session for the community pharmacists was important, as the session could only last up to 2.5 hours in the evening, following the working day of the community pharmacists.

The training session was designed mainly to inform community pharmacists about the concept of health literacy in relation to pharmacy and medication-literacy, limited health literacy and its consequences, prevalence and which patients are affected. Furthermore, the session was designed to introduce the community pharmacists to some health literacy interventions they could use in their day-to-day practice. In development of this training session there were a number of questions to be answered;

- How can the community pharmacist achieve the learning outcomes?
- What conditions should be provided to facilitate the community pharmacists learning?
- How can the training session be designed?

Robert Gagne's[226] theory of learning provided a useful answer to the above questions because he proposed not only a new integrated taxonomy of learning outcomes, but also specific learning conditions for each classification level, and instructional events to activate the learning process. Another instructional design model called ADDIE (Analysis, Design, Development, Implementation, and Evaluation) was considered for this present study. The ADDIE model gives instructions to the designer to write learning objectives and determine the instructional strategies that will be utilised to achieve those objectives. Decisions are made about how the instructional materials will look, feel, operate, and be delivered to the learner. However, this model is predominantly used in the development of multimedia content for learning and has some significant weaknesses. Firstly, the model is very complex with many categories to follow in a very structured process, possibly resulting in hindering creativity from the designer. Secondly, there is no accommodation for dealing with faults or good

ideas throughout the planning process and thus could lead to fragmented instruction. Finally, the model is somewhat "front-end loaded", in other words the model focuses heavily on content design and development and very little focus on the interaction between the instructor and the learner during course delivery. In contrast, Gagne's model obtains buy-in from the learner in the first step by laying the foundations for learning retention, achieved by telling a story or asking a thought-provoking question of the learner. Furthermore, the process of moving through the model allows for creativity from the designer.

Gagne's theory[226] has three main components namely; Conditions of Learning, Taxonomy of Learning Outcomes and Nine Events of Instruction and if followed sequentially, can enhance the learning process, improve session flow and ensure objectives are addressed[227].

In addition, when developing this training session key learning styles, which are a student's 'natural, habitual and preferred way of absorbing and processing information[228] where considered. Thus, the training session accommodated the three key principles of learning styles – visual, auditory and kinaesthetic.

A central notion to Gagne's theory is conditions of learning[226] such as, external and internal, which both are necessary to promote the learning outcomes. External conditions are outside the learner and are the learning situation, environment and learning aids used to facilitate the learning[227]. Therefore, several factors were considered when planning the training session, firstly, various stimulus in the session such as role plays and problem-solving questions. Secondly, the venue and time of day to deliver the session and finally, a variety of learning aids, such as listening, talking and, visual to engage the needs of different learners.

In contrast, the internal conditions are inherent skills and capabilities, that the learner has already mastered[227]. Community pharmacists may already have skills and capabilities such as attention, motivation and recall, however, it was hoped that the training would help to transform these, resulting in a change of behaviour, which would indicate learning has occurred[227].

Gagne's Taxonomy of Learning Outcomes helps to define how learning might be demonstrated[229], by proposing five broad categories of learning (Figure 12). Gagne believes learning occurs as a series of events; learning low-level concepts then progressing further to high-level concepts[226]. Thus, intellectual skills form a hierarchical structure, where each learning outcome must be accomplished before effective learning of the next outcome can begin[227]. Thus, in the present study community pharmacists need to first master the concept of health literacy followed by additional 'knowledge blocks'[227,229] that are constructed and added to their learning for example, limited health literacy consequences and interventions used to help support limited health literacy patients.

In the present study, the final learning outcome was for community pharmacists to have an awareness of health literacy and to understand how to use health literacy interventions. Working back from this final outcome, as recommended by Gagne[226], the individual learning outcomes where devised with Gagne's taxonomy in mind (Table 13)

Figure 12. Gagne's Five Major Learning Domains

Intellectual skills	Cognitive strategies	verbal information	Attitudes	Motor skills
Discrimination; Distinguishing objects, features or symbols **Concrete Concepts**; Identifying classes of concrete objects, features, or events **Defined Concepts**; Classifying new examples of events or ideas by their definition **Rules**; Applying a single relationship to solve a class of problems **Higher Order Rules**; Applying a new combination of rules to solve a complex problem	Employing personal ways to guide learning, thinking, acting, and feeling	Stating previously learned material such as facts, concepts, principles and procedures	Choosing personal actions based on internal states of understanding and feeling	Executing performances involving the use of muscles

The learning taxonomy is only part of Gagne's proposal for instructional theory. He provided nine specific events of instructions, which serve as a guideline for designing instruction. As with the Taxonomy of Learning Outcomes, the concept of hierarchy is also noted in this component, whereby each step highlights a form of communication that aids the learning process and when each step is completed in turn, learners are more likely to engage and retain the information[227]. We will now look at these nine events side by side with the training session in the present study and how each theoretical concept was intended to be used.

Table 13. Learning Outcomes in Relation to Gagne's Theory

Primary Classification of Learning Domain	Learning condition	Present Study
1.Intellectual Skills		
Discrimination Concrete Concepts Defined Concepts Rules Higher Order Rules	1. Draw attention to distinctive features. 2. Stay within the limits of the capacity of working memory. 3. Stimulate the recall of previously learned component skills. 4. Use verbal cues to help order and combine the component skills. 5. Schedule occasions for distributed practice and review. 6. Use a variety of contexts to promote transfer.	learning to use health literacy interventions and connect these to their role as a pharmacist
2.Cognitive Strategies	1. Describe or demonstrate the strategy 2. Provide opportunities to practice the strategy. 3. Provide feedback as to the creativity or originality of the strategy.	Identifying patients, the community pharmacists have to play in helping build health literacy in patients. Practice using interventions
3. Verbal information	1. Draw attention to important features. 2. Encourage chunking of information. 3. Provide a meaningful context for encoding. 4. Provide cues to stimulate recall and transfer.	Facts and figures about health literacy and its consequences, relating this to medicines and patients they see.
4.Attitudes	1. Associate the attitude with success. 2. Associate the attitude with an admired human model. 3. Arrange for personal action associated with the attitude. 4. Give feedback for successful performance	What confusion do pharmacists see in patients, difficulties seen with label instructions and information given to patients, impact on poor medication-literacy
5.Motor Skills	1. Use verbal guidance for executive routine 2. Arrange repeated practice. 3. Give immediate feedback. 4. Encourage mental as well as physical practice	Writing on the discussion boards and in work book

Level 1 Gaining Attention

The learner's full attention and interest needs to be captured so learning can

begin. In this present study, I planned to use an activity, during and around the

refreshments at the very beginning of the night, where attendees could start to

develop their thoughts whilst networking and having their refreshments. It was hoped that this firstly, would help to gain interest and set the scene of the session and secondly, generate thought provoking conversations between attendees. I also intend to use the first few opening slides of the presentation to gain their attention and interest.

Level 2 Informing Learners of the Objectives

This level is to help the learners understand what they need to learn and why they are about to learn new knowledge. This could be achieved by ensuring each learning objectives were clear and specific with expectations that were measurable and achievable[230].

Level 3 Stimulating Recall of Prior Learning

Most new learning depends on connections with prior learning and experiences[231], and so it was hoped that as the community pharmacists gain new knowledge, it was matched to related information they may have learnt in the past. Therefore, I planned to have an activity in the training session that asked attendees to identity skills and abilities that their patients need to be able to understand medicine taking. Therefore, recalling experiences in a group session may heighten the relevance and help to build knowledge in other learners[231].

Level 4 Presenting the Stimulus Material

Presenting the content of the training session in an effective, logical and meaningful manner[227] is an important part of the design. To achieve this it was intended to plan the session in a logical order, starting with the simple concept of the theory of health literacy moving on to more difficult concepts such as how

community pharmacists could help, therefore allowing the community pharmacists to learn one concept at a time and building on their prerequisite knowledge[231]. Furthermore, it was planned that the community pharmacists would be guided through the session by interactive means targeting visual, auditory and kinetic learners whereby, the session used a variety of different techniques to suit attendees with different learning styles.

Level 5 Providing Learning Guidance

This level is about providing the community pharmacists with activities and aids could ensure what had been presented to them will be stored in their long-term memory[231]. To fulfil this level of providing learning guidance, it was planned include short guided activities, role plays, case studies, guided discussion and visual prompts from videos.

Level 6 Eliciting the Performance

It was hoped that the community pharmacists apply the new knowledge and skills that have been taught, and so to address I planned to incorporate activities that involved group working and individual working.

Level 7 Providing Feedback about Performance

In the present study, I planned to provide informative feedback after each activity so that corrections to misunderstanding could be resolved.

Level 8 Assessing Performance

To achieve this level, I planned to ask the community pharmacists, end the end of the session, to relay what they have learnt, based on the learning objectives set at the beginning[227], and give objective feedback to their responses.

Level 9 Enhancing Retention and Transfer

This training session would be designed to ensure community pharmacists transferred the learning to their day-to-day practice. To achieve this, it was planned to have different activities, such as role plays, so the community pharmacists could practice newly learnt skills and peers could provide feedback on how they performed. It was also intended to provide community pharmacists with a tool, such as a pocket-sized card, that could be used, during their working day, as an aid for knowledge retention and transfer.

The training session would also be designed to accommodate the key learning styles namely, visual, auditory and kinaesthetic, as seen in Table 14

Table 14. Learning Styles and Techniques included in the planned training package

Learning style	
Visual	PowerPoint, colours and drawings used on slides, videos, note taking in workbook, flipchart, pocket guide
Auditory	Lecture, videos, keep repeating key messages, group discussions, verbal feedback, brain storming.
Kinaesthetic	Frequent moving of groups, role plays, pocket guide, coloured paper for work book,

4.5.2 Sampling Strategy

As with Phase One of this study, the sample of participants in this phase, Phase Three, was also purposive. This also has been discussed in section 4.3.2 of this chapter

It was aimed to recruit at least 25 community pharmacists onto the training session, in the hope that a number of these would agree to participant in Phase Four of the study.

4.5.3 Recruitment and Consent

Registered community pharmacists were invited to attend the health literacy training session. The invite was sent via email flyer advertising the training session, which also included practicalities such as date, time and venue. The invite also stated that there would be an opportunity to take part in the study if they wished and more information would be given on the night.

Factors that were considered important to encourage community pharmacists to attend included convenient timing of the training session for example, this needed to be near the end of the working shift and when the pharmacy closed. Furthermore, the session duration should not be too lengthy as the community pharmacists may be tired after their working day in practice. Another factor to consider was the venue which needed to be in close proximity for the community pharmacists to travel to.

Of the 117 emails sent out to local community pharmacists 27 confirmed attendance to the training course.

4.5.4 Data Collection

Research indicates that the most popular reasons for evaluation of training sessions are to gather information to help decision makers improve the training process[232]. Evaluation also helps measure the degree of improvement in application and assesses how well the learner achieves the established goals[232]. The evaluation for this training session considered many aspects in addition to the subject matter itself for example, the facilities, audio visual aids, timing. This evaluation therefore links with Gagne's Conditions of Learning theory discussed in section 4.5.1

The evaluation (appendix 11) was made of 13 questions ranging from whether the objectives had been clearly defined, expectations met, confidence in supporting limited health literacy patients, to timing of the training and comfort of venue. The questions in the evaluation were randomly sorted to help avoid biasness caused by the order of the questions. The survey questions used a 5-point Likert scale to permit good scale discrimination[233]. The scale ranged from strongly disagree to strongly agree. The evaluation sheet was given, as hard copies, at the end of the training session.

After two months, interviews took place (as part of Phase Four) and participants were asked, again, about the training session. The first part of this interview was designed to explore whether the participant had transferred any knowledge, skills or attitudes gained by attending the health literacy training session to their professional behaviours.

4.5.5 Data Analysis

To make meaningful comparisons of questions, raw numbers from the Likert scale was converted to percentages and placed in a table, this allows the comparisons between the questions while reporting the total number in training session.

The follow-up interview used the framework analysis as described for Phase One interviews (section 4.3.5)

4.6 Phase Four

4.6.1 Background Justification of Semi-Structured Interviews

The same justification for semi-structured face-to-face interviews was applied this Phase Four part of the study as was applied to Phase One of the study. The justification was outlined in section 4.3.1 of this chapter.

4.6.2 Sampling Strategy

As with Phase One interviews, participants for Phase Four were registered community pharmacists. However, for this particular phase of the study the community pharmacist must have attended the training session to ensure they understood health literacy and how the interventions could be used within their day-to-day practice. The training session was expected to attracted a range of community pharmacists (age, gender, experience) from the same geographical area as Phase One, who practiced in a variety of setting such as rural, town centre and supermarket pharmacies.

Phase Four aimed to recruit approximately 20 participants initially. As with Phase One interviews, once transcribing had taken place, if saturation had not been achieved, recruitment would continue until saturation was achieved.

4.6.3 Recruitment and Consent

During the training session, delivered to community pharmacists, a small presentation was given regarding the reasons for the study. The final part of the presentation detailed the ambition for phase four. The participants were then directed to the participant information letter, consent that was laid out in the reception area of the training venue, away from the training room. The documents were sited there to ensure the participants had the freedom to decide whether to take part in phase four without me inappropriately coercing the community pharmacists to pick up the documents and take part. Within the documents my contact details were given in order for the community pharmacists to contact me if they wished to take part.

4.6.4 Data Collection

The interview guide (appendix 12) was developed in a similar way as to that of Phase one. Phase Four interview guide contained 3 key areas. Firstly, addressing the training session in which the community pharmacist attended, by asking their thoughts around the length of session, content and their overall knowledge gained. Secondly, questions asked about their experiences in using the health literacy interventions with their patients. Finally, to understand whether they would continue to use the health literacy interventions in their day-to-day practice.

Informed consent was received from each participant prior to commencing each interview. The interviews carried out used the cycle approach described for Phase One interviews (section 4.3.4).

As with Phase One all interviews were digitally recorded and then the recordings were transcribed verbatim. I transcribed each interview which allowed me to immerse myself and have a close interaction with the data and to start the process of analysis. This process mirrored the approach taken in Phase One (section 4.3.4)

Data Analysis

In Phase Four, the analysis used was framework analysis. The process taken was essentially the same as described in Phase One (section 4.3.5) whereby, I would read and re-read word by word the interview transcripts several times and then capture key thoughts and concepts. I identified initial codes or labels that emerged from transcripts which were then listed in chronological order. This list then provided me with a basis for grouping the themes. I then proceeded to find connections between the themes and in doing so grouped them under different main themes.

4.7 Summary of Chapter

This chapter has discussed the final layer of Saunders research onion by presenting the procedures involved in the methods for all four phases of this study. The data collection methods have been described in detail, and a step-by-step account of the method of analysis has been provided in order to provide transparency to this study.

CHAPTER 5: FINDINGS FOR PHASE ONE

Chapter Overview

This chapter is dedicated to illustrating the findings from interviews with participants in relation to health literacy knowledge and understanding (Phase One). The chapter starts by presenting the participants accounts of experiences they faced with patients and medicine-related issues. Participants then went on to describe how they recognised such patients and their thoughts of which populations of people would likely have medicine-related issues. Finally, the chapter presents participants reports of their awareness, knowledge and understanding of health literacy and whether a training session on health literacy would be helpful to them.

5.1 Introduction

Interviews typically lasted between 40 and 50 minutes. It was difficult for community pharmacists to leave their professional duties for more than this length of time. Interviews took place at the location of each pharmacist's workplace, within the private consulting room except pharmacist CP5. At the request of the pharmacist, the interview took place in a quiet coffee shop next door to the pharmacy. The pharmacist's reason for this was due to the pharmacy consultation room being needed for patient consultations therefore, our interview may have been interrupted.

In order to convey the essence of the phenomenon under investigation, verbatim excerpts from the face-to face-interviews are presented. Each excerpt is presented by giving the participant a number, for example, CP1. Additionally, this

is to ensure participant confidentiality. Page and line numbers from the interview transcription, for example, 8:45-67 are used to ensure a robust audit trail. Ellipses (…) indicate omitted material and brackets [ ] indicate material that has been added by the researcher to increase the readability of the excerpts.

5.2 Participant Profile

A total of 19 semi-structured face-to-face interviews, with 8 females and 11 males, were conducted. Table 15 outlines a summary of demographics of the community pharmacists taking part in the interviews.

The participants came from a range of working backgrounds, such as owners of the pharmacies, 2nd pharmacist, locum or manager. Those participants recruited into this phase of the study, thus provided an appropriate, broad sample to generate data to help provide answers to the research objective. Thirteen pharmacists had been registered for 15 years or more, and so it is possible they may have a lot of experience dealing with patients who are confused with medicines. Only one pharmacist had been practising for under 5 years. Of the 19 participants, six also had experience in other sectors of pharmacy, such as hospital or education.

Table 15. Participant Demographic

Community pharmacist (interview number)	Gender	Years on register	Status within the pharmacy	Pharmacy size	Location	Pharmacy type
CP1	Male	20	Owner	Small	Village	Independent
CP2	Female	25	Locum	Large	Town	Multiple
CP3	Male	29	Owner	Small	Surgery	Independent
CP4	Male	3	Locum	Small	Surgery	Independent
CP5	Female	22	Owner	Small	Village	Independent
CP6	Male	8	2nd Pharmacist	Large	Town	Multiple
CP7	Female	26	Manager	Large	Supermarket	Multiple
CP8	Male	15	Manager	Small	Campus	Multiple
CP9	Male	29	Locum	Medium	Town	Independent
CP10	Female	27	2nd Pharmacist	Large	Town	Multiple
CP11	Male	8	Manager	Medium	Supermarket	Multiple
CP12	Male	26	Owner	Medium	Village	independent
CP13	Female	15	Owner	Small	Town	Independent
CP14	Male	19	Manager	Medium	Supermarket	Multiple
CP15	Female	22	2nd Pharmacist	medium	Surgery	Multiple
CP16	Female	10	Locum	large	Town	Multiple
CP17	Male	16	2nd Pharmacist	large	Town	Multiple
CP18	Male	7	Manager	small	Village	Independent
CP19	Female	9	Manager	medium	Surgery	Independent

5.3 Themes Identified

The remaining part of this chapter presents the analysis of community pharmacists' responses from the face-to-face interviews. The framework approach[137] was used to analyse the interviews. Topics were derived from the literature on health literacy and the interview guide, and themes emerged during the familiarisation and engagement with the data. The analysis yielded five overarching themes, which are presented in Table 16. These themes were; 1) confusion seen in patients visiting the pharmacy 2) Recognising confusion in patients 3) Community pharmacists' perceptions of patients likely to be confused 4) Awareness and understanding of health literacy 5) Desire to learn

Table 16 Themes and Subthemes

Confusion seen in patients visiting the community pharmacy
Subthemes incorporated into this theme were areas of confusion that community pharmacists saw in their patients. These were created by grouping confusion into subthemes as follows: _struggling with medicines and their instructions_, (eg. Dose timings, stopping or starting new medicines) _struggling with healthcare professionals_, (eg. Assuming knowledge, no information) _struggling with NHS systems_, (eg. Prescription ordering systems) _struggling with media and advertising_ (eg. Internet and newspaper).
Recognising confusion in patients
Subthemes incorporated into this theme included two factors that motivated the community pharmacists to detect confusion. Firstly, _pharmacist driven_ in that the pharmacists noticing the issues and secondly, _patient driven_ in that the patients revealing a clue that they are confused.
Community pharmacists' perception of patients likely to be confused
Subthemes were; _elderly, young, SES and low educational attainment, and ethnic minority_
Awareness and understanding of health literacy
Subthemes incorporated in this theme included; _awareness_ (eg. No awareness, vague awareness), _understanding_ (eg. reading and writing,

engagement, responsibility, public health,) *meaning for community pharmacy practice* (eg. Ensuring understanding, developing health literate patients)
Desire to learn
Subthemes included in this theme were *willingness* and *design*

5.3.1 Confusion seen in patients visiting the community pharmacy

Before community pharmacists can begin to help patients, it is first necessary to explore whether community pharmacists actually observed patients being confused with medicines, what type of patients' pharmacists saw and how they recognised confusion in these patients. Within this study, confusion was understood to be anything that caused the patient to struggle in understanding something about their medicines, which in turn, prevented them from ordering, collecting, taking or using the medicine correctly.

During interviews, participants provided insight into their perceptions of how patients may be confused with medicines, through descriptions of their engagements with various individual patients. In discussing the accounts, the participants had a story to tell and all of them offered information readily without much prompting. For example, after asking the question, *"Talk me though experiences you have had of patients who are confused with medicines"*, the participants talked at length about numerous instances. For example, CP17 described his experience in relation to the vast amounts of medicines-related queries from patients he dealt with:

> *"how many do you want, I could be here all day. We spend most of our day sorting out issues with confused patients that struggle with medicines or instructions …"*
>
> **(CP17,1:4-5)**

In discussing confusion in patients, many of the participants often used the words 'struggle' or 'struggling' to describe how patients cope with their medicines, information and instructions about medicines, the NHS and healthcare professionals. This term was used, with reference to four different, but related aspects of confusion seen in patients: struggling with medicines and their instructions; struggling with healthcare professionals; struggling with the healthcare system; struggling with media and advertising. These stories and issues with medicines-related confusion are now discussed further. A summary is presented at the end of each main theme.

Struggling with medicines and their instructions.

In the participants' accounts of their experiences with patients who appeared to be confused with medicines, it became apparent that they witnessed issues on a daily basis. One area that participants appeared to see very frequently was patients' not knowing why they were taking a particular medicine. Seven participants had a story to tell about how medicines just appeared on a patient's prescription, without apparently being informed by the prescriber. This seemed to take considerable time for the participant to resolve, in order to help and counsel the patient. Here, one participant explains an example of what they recently dealt with:

> *"…I have had to ask "have you had a blood test"? So, this may indicate a new drug because of the blood test results. Or "have you been to the doctors recently? Have you been to talk about anything with the doctor that then they may have given you a medicine"? Because they [patient] had no idea that something had appeared on the prescription…So the patient was never*

> *aware and was never told that they needed to start taking a new*
>
> *medicine…"*

(CP2,2:58-64)

Lack of medicine knowledge by patients was mentioned in other ways. Ten participants described how patients perceived a medicine to have been prescribed for something very different than it had actually been prescribed for. Thus, creating an inaccurate understanding of how the medicine worked for the condition. Here, CP3 talks about a patient who recently visited a GP for a specific condition, yet still had confusion about the medicine prescribed:

> *"I had a patient given cetirizine tablets which they were told to*
>
> *take by the doctor, but they hadn't really understood why they*
>
> *were taking these tablets even though they went to the doctors*
>
> *for an allergic type reaction on their skin. They thought they*
>
> *were actually painkillers because the allergic reaction on the*
>
> *skin was giving them some pain on the skin"*

(CP3,2:31-34)

Many participants expressed frustration about not having enough information about a prescribed medication and about a patient's clinical situation to effectively counsel patients.

Participants also described the many patients they had helped to understand the dose frequency of medicines, such as when to take the medicine. Many participants talked about patients' ability to adhere fully to the instructions for a prescribed medicine. It is essential that, at the very least, the dosage instructions are understood, and thus can be acted on. In the quote below, CP12 describes

how he and his staff tried many times to help a patient understand a simple dose instruction:

> *…he really struggled to understand at all what four times a day meant. So we were trying to explain things like take them every six hours but he still did not understand. So, we told him to take the first one at 8 AM but he said he didn't get up at 8 AM so what time should he take it. He really did not understand when to take it and what was every six hours.*

(CP12 4:89-93)

In the same vein, CP9 explains how he sometimes needs to go back to basics with some patients, and yet even this does not work in some cases!

> *…a patient will often ask "what do you mean, three times a day" An instruction that is really so simple and yet I have had experiences of patients struggle to understand it. Even if I said to them "take the medicine every 8 hours" it still causes confusion for them. So, I strip the instructions back even further and say "breakfast, tea and bed" and do you know what they say? "I don't have breakfast so shall I miss that dose"*

(CP9,2:32-37)

In discussing patients' confusion with medicines, participants frequently referred to issues they had come across, relating to numeracy problems that some patients face. Of the nineteen participants interviewed, sixteen associated confusion with low confidence in numeracy skills. They appeared to believe that the patient's confusion in dosing was demonstrated through their poor understanding of figures or numbers. For example, one participant describes the issues with reducing doses down, in order to discontinue the treatment, while

another participant talks about a patient unable to understand how to measure a liquid dose:

> *"the most common one that I probably see every week is … the reducing dose prednisolone. … I think they struggle to relate the day and the dose needed. I also think some patients have trouble with numbers so a reducing dose of prednisolone can be complicated to them"*

(CP19,1:8-11)

> *"…he just could not understand how to measure 15mls for his lactulose. I tried to show him on a measuring cup but he really did not understand. So "in the end I gave him a spoon and told him to take three spoonful's. I then changed the label to reflect this rather than saying 15mls"*

(CP16,2:32-34)

Participants also implied how poor numeracy skills may affect a patient from having a healthy life:

> *"Surely we all need some basic math skills to live a health life … what about knowing about calorie numbers or intake to keep our weight right …"*

(CP19,2:5-7)

All participants mentioned how patients became confused when their medicines had been switched to a generic version, or when the generic medicine had changed from one manufacturer to another. Some participants mentioned how they had dealt with patients that had taken their medicines twice, because they looked different.

> *"I see many patients struggling to understand the difference between branded and generic drugs and then of course all the different types and colours of generic … they don't understand it's the same drug …"*
>
> **(CP5,4:9-12)**

Some participants went on to discuss the time constraints in relation to this issue:

> *"…you have no idea how long this takes out of the working day … trying to explain to patients about the two medicines [branded and generics] and that they are the same…"*
>
> **(CP7,11-13)**

Many participants appeared to believe it was their role to ensure patient understood their medicines and by doing so gave added value to the service they provided.

> *"…I spend a lot of time explaining things like differences in generic drugs … I suppose I think that I don't just give the medicines out I have to ensure they understand … my company [pharmacy employer] call it 'added value' …"*
>
> **(CP14,4:70-73)**

During the course of the interviews, participants talked about Patient Information Leaflets (PILs) and mentioned that they are among the most important sources of medicines information for patients. Although PILs were not specifically explored in this study, and whether they are understood by patients or not, some participants voiced negative perceptions about them. One participant spoke

about incidents where patients were confused on how to use medical devices, and yet PILs were given:

> *"I had a patient once that took his Spiriva capsules, you know, orally instead of putting them in the inhaler device. And yet the [inhaler] device was dispensed with the capsules in the same box with a patient information leaflet, so it really makes you wonder why patients made the mistake"*

(CP13,3:78-81)

Others also spoke about the implications of PILs not being user-friendly by associating this with patients not taking their medicines:

> *"I think the patient information leaflets cause unnecessary confusion for patients. Many [PILs] are unreadable and so the patient just ignores them ... but in the main most patients get really worried by the list of side effects and ... just won't take the medicines"*

(CP13,5:100-102)

Struggling with healthcare professionals.

In general, participants appeared to have concerns that they, and other healthcare professionals, often assumed their patients' understanding of their health conditions and medicines. Participant spoke about pharmacists providing minimal or no information to some patients, particularly if the pharmacist thought the medicine was easy to take because it was a dose of once a day:

> *"…cetirizine is a simple drug you just take it once a day doesn't cause any drowsiness, not really a problem lots people take it so it's simple in our eyes and I tend not to counsel patient very much. However, when I get a drug such as methotrexate, we would counsel patient with all the do's and don'ts"*

(CP11,3:65-69)

Several participants said that poor communication from healthcare professionals was likely to result in confusion for patients. Participants also appeared to perceive that poor communication and counselling skills from the pharmacists meant that the opportunity to identify the lack of understanding by patients about their medicines was lost. During the course of the interviews, many participants reported that they tried not to use medical jargon when talking to patients and many recognised that patients can often be confused by the language and unfamiliar medical jargon that pharmacists and other healthcare professionals use. For example, one participant talked about how patients may quickly end a conversation to avoid the embarrassment of having to ask questions that may be perceived as simple:

> *"…I thought I explained things well and simple but when the patient left the pharmacy quickly without asking me anything, I reflected a bit … I then realised that I had used too complicated words … you know, medical words that they may not understand … silly of me really"*

(CP17,7:131-133)

Struggling with the NHS system.

Patients struggling with medicines were described by some participants as a fault of the NHS system. Out of the nineteen interviews, fifteen associated patients' confusion with ordering and collecting systems of prescriptions and how complicated this was for patients.

As discussed in chapter 1, health literacy is not solely dependent on the individual's skills alone but it is also related to the complexity and structure of the healthcare system. This is an important point the participants also made. For example, CP15 described situations that they had seen with their patients:

> *"I can not tell you how many patients I have in a week that run out of tablets and that struggle with ordering and collecting prescriptions….and now with all the new technology … EPS [electronic prescription service] I think it is worse ... I spend a lot of time now trying to explain to patients how it works and yet the patient comes back the following month and they have still ran out [of tablets] so I have to explain again"*

(CP15,6:109-115)

This account gave insights into participants experience with confusion caused by NHS systems. Indeed, as noted by CP15 and nine other participants during the interviews, the NHS system for patients to order and collect prescriptions has become even more complicated, with the introduction of EPS. One participant discussed how they thought it was time for the Department of Health to focus on NHS systems that help patients rather than hinder them:

> *"The DoH should have the interests of the patients at heart and should focus on helping patients find systems [for ordering prescriptions] easier rather than making the whole process more difficult and complicated to understand"*
>
> *(CP16,4:65-67)*

Three participants mentioned how they saw patients confused with medicines when discharged from hospital, and the confusion between the strength and shape of their tablets.

Struggling with media and advertising.

Of the 19 participants interviewed individually, 15 expressed strong views about the media and advertising that appeared to cause confusion in their patients. Most offered reasons as to why this may cause confusion, such as the mixed messages that the media relayed. Participants mentioned that the media can reach large audiences, most frequently via television or radio, with some participants mentioning the use of billboards, posters, magazines, newspapers and the internet for advertising.

Seven participants reported that they frequently helped patients understand the pros and cons of taking certain medicines, such as statins. This was because the patient had talked about reading something in the media or on the internet, which appeared to have had led to confusion, and the possibility that the patient may be intending to stop taking the medicine:

> *"Statins get a lot of coverage in the press … pain of my life … the confusion it causes in patients is unbelievable"*
>
> *(CP14,7:137-138)*

CP10 reported that a patient was so confused with what to do about his statins because he was reading in newspapers and the internet. He brought in a neatly organised scrap book of newspaper and internet cuttings. Each cutting was organised under the headings, 'reasons to take' and 'reasons not to take'. Another participant (CP12) told a story of how his patient recently had a number of TIAs (transient ischemic attack). When conducting an MUR with the patient shortly after, it was identified that the patient decided to stop taking his aspirin, despite there being good evidence of benefit in stroke prevention, because he had apparently seen a television programme that mentioned it was not good to take.

Some participants reported that they realised that throughout their pharmacy career the media can be very powerful in advertising medicines. However, on the other hand, this could cause confusion in patients. Participants noted that the uptake of Internet use has been rapid and worldwide which has enabled patients to access medicines, advertising and information. For example, CP5, who was in her 40's, talked about how the internet can be a catalyst for confusion, particularly in younger generation patients:

> *"In my experience the internet causes a lot of confusion in patients particularly the younger patients … I mean late teens to mid-twenties. They read all the internet sites and think they have the right answer. However, when my staff or me question them we realise they have interpreted all the information wrongly …"*

(CP5,9:149-152)

In summary for this theme, these rich descriptions from first-hand experiences of participants suggested that for them, confusion in many patients is seen as a daily occurrence. It would appear that patients may exhibit confusion in many

areas of medicine taking. For example, participants described issues with understanding timing of doses, knowledge of the medicine, ability to relate numeracy skills to medicines and issues with generic prescribing.

The key issue also appears to be the impact of healthcare professionals on the patient's journey through the healthcare system, and their contribution to patients' confusion. The comments suggest that healthcare professionals may often not adequately address the needs of patients, because they tend to assume prior knowledge or use medical jargon that is not understood, which may jeopardise medicine adherence and safety. The findings have provided deeper insights and better understanding about the patients' healthcare experiences; in this instance, in relation to medicines and the patients journey in ordering, collecting and taking their medicines effectively.

5.3.2 Recognising confusion in patients

Community pharmacists need to be able to look out for signs and unexpected problems from patients, in order to help them, and in the interviews, participants were asked how they recognise confusion in a patient. Participants provided rich descriptions of how they identified patients that were confused and needed help with medicines. For this theme, two subthemes emerged; pharmacist driven and patient driven, as now discussed.

Pharmacist driven.

Participants talked about finding their own technique in identifying patients that where confused with medicines and health information, for example, commonly,

participants talked about having a 'sixth sense'. Three pharmacists provided insight into how they use their 'sixth sense' to recognise confused patients:

> *"I don't think I can quite explain it, but it's a sixth sense, something they [patient] say, do or the way they look, something just doesn't quite fit. They may not say or do much but it's enough information to trigger my sixth sense"*

(CP12,3:63-66)

> *"I can't tell you how I do it, I just instinctively know something is not right. The patient has not necessarily said or done anything but I just know … I know they are confused about the medicines or their condition"*

(CP7,4:81-84).

> *"I think we know the patient is confused before even they know … call it sixth sense I suppose. I think my years of experience and of course the relationship I have with my regular patients, has given me the ability to know something is wrong … I can't tell you how I know, I just do"*

(CP14,7:141-144)

For many participants the patients' behaviour would be used to identify confusion in patients. However, many declared that this was down to their experience as a community pharmacist. Fourteen participants mentioned that patients did something that would stand out as being unusual. For example, one participant talked about his experience in being able to detect a problem in his patients:

> *" … or if we notice that they're not picking up or requesting certain prescription items as you would expect them to, or they would ask you not to dispense something off the prescription … So, trends or patterns would indicate that they're not using or understanding their medications… this takes years of experience, also because we need to learn to know what is right and wrong behaviour in a patient"*
>
> **(CP1,1:29-35)**

One participant provided insight about how he communicated with his patients, in order to detect confusion. He also mentions that his experience has helped him to recognise confusion, similar to CP1 above. He talked about asking patients open-ended questions, hoping to encourage them to talk and ask questions, so he would be able to notice any confusion:

> *"I would spend a little time with patients and over the years I have learnt to ask more open-questions. I suppose I hope that this will help me spot some confusion, if there was any"*
>
> **(CP18,7:145-146)**

Patient Driven.

In the main, participants said that many patients do not outright say that they do not understand about their medicines or information given to them, but many patients do want to 'check' something with them. Of the nineteen participants interviewed, four mentioned that it was the patient themselves that displayed their confusion by asking something:

> *"they [patients] ask to have a word…they usually say "can I check something with you …"*

(CP19,5:103)

Some participants gave lengthy accounts as to how they often relied on a family member or carer to report the patient's confusion. Some reported that neighbours often popped into the pharmacy to seek clarification on someone else's behalf. For example, one participant talked about how a patient's relative expressed concern about the patient:

> *"… a lot of the time it is a relative that comes into us and tells us that their mother or father or aunt and uncle are confused with their medicines and are not taking their medicines or actually taking too many of their medicines. So, it is normally a relative that brings it to our attention that the actual patient is confused"*

(CP4,8:121-124)

CP10 reported a similar finding, as she recalled a carer she had spoken to:

> *"...the carer came in to discuss what we could do for Mr X … I didn't even know he had a problem until she [carer] spoke to me"*

(CP10,3:55-57)

In summary, the findings revealed different perspectives of how confusion is detected in patients. In the main, it was reported that participants use both their experience and 'sixth sense' to know whether the patient is confused with medicines. Furthermore, participants ability to recognise confusion also demonstrated has strong relationships can be built between pharmacists and

their patients. Nevertheless, pharmacists also often relied on other people, such as carers and family to inform them of issues the patient may be having.

5.3.3 Community pharmacists' perception of patients likely to be confused

Participants were asked specifically what the typical characteristics were of a patient, or a population group, who may be confused with medicines. While the majority said elderly patients and patients taking multiple medicines, only a few suggested groups, such as low socioeconomic status (SES), low educational attainment or minority ethnic groups. Each subtheme; elderly, young and low education attainment are now discussed below.

Elderly people.

Participants appeared to recognise that many elderly patients suffer from a number of long-term conditions and multi-morbidity, and so the number of medicines prescribed to people aged over 60 years was high. Participants had similar views in that the elderly population often exhibited confusion partly due to complex medication regimes. In general, participants described the large amount of time involved in helping elderly patients understand their medicines. For example, one participant explained that:

> *"elderly get very confused with their medicines because they have so many to understand ...I have a lot of elderly patients and I feel I have to spend more time with them to help them understand all their medicines".*
>
> **(CP3,9:154-156)**

Young people.

Although all participants identified the elderly as a group mostly confused with medicines, two participants also mentioned the younger generation. In her individual interview, CP2 indicated that younger patients may not understand medicines and information at least in part, due to the parents' lack of knowledge or experience with medicines;

> *"… the younger generation can get easily confused because they are not actually use to taking medicines and if their parents have not had many medicines, they can't help them … some younger patients rely on their parents to help but if they don't understand medicines and information …well the younger patient will get it all wrong"*

(CP2,5:158-162)

Socioeconomic status (SES) and Low Educational Attainment.

Some participants were aware that confusion may be associated with low socioeconomic status and low educational attainment. This was suggested by eleven participants as being associated with being confused with medicines and health information. Participants suggested that if their patients were educated, spoke well and were visually well presented or well-groomed then they may be less likely to have difficulties understanding medicines instructions;

> *"... We are in reasonably good area here, you know good education, people speak and dress well … I expect they don't really have any problems with understanding my instructions"*

(CP14,7:141-144)

Similarly, another participant talked about people with higher levels of education not being at risk of misunderstanding medicines and information.

> *"The patients I service are from a wealthy area and so would not have problems understanding medicines and health matters, they all seem very well educated. I think if the pharmacy was … let's say in a deprived area then yes you would come across patients that could not read or write*
> *"* **(CP1,7:184-186)**

The same participant appeared to stereotype patients of low educational attainment by the way they spoke and associated their speech ie. 'rough' or 'uncouth' speech, with a lack of education, and thus, having difficulties understanding medicines,

> *"Through general conversation with them [patients]. The way you greet them, asking them to confirm their address, … you may hear them talking in the shop whilst they waiting for the prescription … just the use of their language … would tell me that they will not grasp … what you're saying to them. If they sound not educated perhaps … if they sound dim they will not grasp information that I am about to give them"*
> **(CP1,7:200-204)**

Ethnic Minority.

Only two participants mentioned patients from ethnic minority backgrounds that may have difficulty with medicines, Thereby, recounting situations and feelings,

which suggested that their role was important in helping these patients understand their medicines.

In summary, different population characteristics thought to have difficulties with medicines and information were reported by participants. Participants' accounts suggested that for them, the elderly posed the greater risk. However, it would appear that participants also found that other groups, such as the younger, SES and education attainment could have confusion with medicines. In addition, one participant seems to stereotype patients from the way they spoke and dressed.

5.3.4 Awareness and understanding of health literacy

Participants were not given, at the beginning of the interview, a specific definition, nor were they directly asked to specifically talk about health literacy. It was not until towards the end of the interview that they were asked, in general, whether they had heard of the term 'health literacy' and what it meant to them. Their responses demonstrated that they were not familiar with the term 'health literacy', with only one participant having some small degree of health literacy experience. The three subthemes; awareness, understanding and meaning for community pharmacy, are now discussed.

Awareness.

Eighteen Participants individually interviewed reported not having heard the term 'health literacy' before:

> *"No, I can't say I have ever come across the term"*
> **(CP18,8:166).**

> *"No, never"*

(CP4,15:223)

Only one participant stated that they recognised the term, and seemed to think it had something to do with a project the pharmacy had been involved with, prior to the interview but did not know what health literacy was about:

> *"I think I have heard of it somewhere … I think I've seen it in the past year and I'm not sure where I've heard it … I think the pharmacy was involved in a project but it was not me personally, this is a large pharmacy with many projects going on so I would have just heard about it but took minimal notice"*

(*CP16,5:86-89*)

Participants were then shown the WHO definition[23] and King's[118] pharmacotherapy definition of health literacy to read and were then asked what they now understood about the term 'health literacy', and what it meant for them as a community pharmacist. The final two subthemes; 'understanding of health literacy' and 'what it means for community pharmacists' are now discussed.

Understanding.

There were many differences in the participants accounts as to what they thought the meaning of health literacy was. Several participants talked about how health literacy was mostly about the patient's ability to read and write, and by possessing these two skills, it would help them help to understand their medicines better.

> *"Patients should be able to read and write and then they can understand information put to them"*

(CP19,6:117-118)

Other views expressed from participants were that health literacy concerned patients being involved with health, medicine-related decisions and making choices:

> *"… engaged in the process of their condition and what medicines they would prefer to take. It's about the patient being able to have a good conversation with a health care professional and make their own mind up about what they want ..."*

(CP11,6:45-48)

During the course of the interviews, participants were asked what they thought the consequences associated with limited health literacy were. Two participants mentioned that patients with limited health literacy may be less likely to participate in preventive healthcare than those with adequate health literacy. CP16, appeared to believe health literacy had an association with public health;

> *"I doubt they would go for screening…you know breast or bowel screening…"*

(CP16,5:98-99).

Twelve participants said that limited health literacy patients may find it difficult to use health information, which would therefore, impact on their medicines use.

> *"Patients can confuse their tablets and their dosing. Patients have poor health literacy would have ... More incidents of over dosage and under dosage"*

(CP6,6:149-150)

What health literacy means for community pharmacy

In general, participants appeared to be aware that they had a part to play in ensuring that patients understand their medicines. Participants expressed some strong views about their responsibility to ensure patients understand medicines;

> *"It is our job to ensure the patient knows how to take their medicines correctly…"*

(CP6,7:155-156)

> *"I consider it to be my main role and professional responsibility to ensure that my patients understand what they are taking and why"*

(CP13,6:119-120)

Some participants gave lengthy accounts with regards to their responsibility, and this became a central feature around the topic of health literacy. In her individual interview, CP5 talks at length about how the community pharmacist is the final person the patient can rely on for information:

> *"we [community pharmacists] are the last port of call for the patient when it comes to medicines and so it is very important, and I would say a big part of my role, to make sure the patient understands everything they need to know about their medicines. So, looking at this [definition on health literacy] I*

> *would say it is up to me to make sure the patient is health*
>
> *literate … so I mean the patient should understand all the health*
>
> *words and terms that I use when talking to them."*

(CP5,16:265-269)

In spite of the statement from CP5 " *to make sure the patient understands*

everything", she was unclear, as we broached the topic of limited health literacy,

that patients are not able to understand basic instructions, such as 'take three

times a day'. This was a preliminary sign to me of her discomfort and confusion

about just what the patients understand and the extent of limited health literacy

seen by patients accessing medicines.

> *"So you are telling me patients do not understand the words*
>
> *'take three times a day'. I find that a little hard to believe … yes I*
>
> *get there would be some … but I doubt it would be a lot that*
>
> *don't even know the meaning of 'three times a day' ..."*

(CP5,17:275-276)

When mentioning this confusion of 'take three times a day' to other participants,

they also failed to make the link between misunderstanding and limited health

literacy.   It did not appear to be at the forefront of participants' ideas that patients

could not understand a simple instruction, such as 'take three times a day'

In contrasts, other participants had a wider understanding of health literacy. Six

participants recognised that health professionals had a role in building patients'

health literacy, even though they had not heard of the term before. For example,

they linked health literacy and the community pharmacist as facilitating the

development of health literacy in patients. They used the scenario to achieve this

by encouraging patients to participant and engage with information about their

medicines. Below is a quote describing how both participants achieved this during an MUR session:

> *"…when I undertake a MUR with my patients I try to encourage them to take part in the whole process by asking lots of questions rather than me doing the talking…so, I may ask "tell me about this tablet, what do you think it does?" hopefully by doing this it helps the patient be more knowledgeable about why and how they are taking their medicines … in the end they will hopefully adhere to them[medicines] better"*

(CP16,4:79-83)

> *"During an MUR with a patient I always check they understand the words I use …for example I would never say hypertension, it's better to say high blood pressure. That way I can make sure the patient understands me and the information I am giving them. … But I still always check as even simple words may not be clear to some patients"*

(CP18,7:147-150)

The description from these two participants shows how the responsibility of limited health literacy has moved from the patients to health professionals and health system. They also recognised that an integral component of health literacy is the communication between patients and health professionals, whereby good communication may lead to better patient understanding and patient adherence. This was further highlighted by CP17;

> *"I think it is all about communication. If I communicate properly*
>
> *or better then I hope the patient will understand me and the end*
>
> *result … hopefully… is that they will understand how and when*
>
> *to take their tablets"*

(CP17,8:156-158)

In summary, this theme suggests that the awareness of health literacy among participants was very limited. Many participants talked about health literacy as being limited to a patient's reading and writing ability rather than comprehension of information. Although participants referred to the importance of literacy skills in enabling people to understand medicines, most stated they had not thought about or heard the term of 'health literacy'.

Participants generally had more knowledge in the areas of consequences and what health literacy meant for them. This may be an indication that participants are familiar with the effects and impact of limited health literacy, due to their day to day experiences and observations with patients, rather than from formal health literacy training.

5.3.5 Learning

During the analysis of interview transcripts, it became clear that all participants seemed keen to learn more about the topic, and how they could use the learning to help their patients. Two subthemes (willingness and design) are now discussed.

Willingness.

Every participant interviewed expressed a wish to attend a training course to learn more about health literacy:

> *"I am always willing to learn, especially if it will help my patients"*
>
> *(CP18,9:182)*

Some participants expressed concerns about the constant changing world and the need to keep up to date, and thus would be happy to attend training on health literacy:

> *"There is such a lot of change in the healthcare profession but it is important to stay in touch and up-to-date. … There are new things all the time. I would be happy to attend to learn more about this subject"*
>
> **(CP7,7:174-176)**

Similarly, CP10 also confirmed the vision of updating knowledge and continuous learning as an integral part of the profession:

> *"The pharmacy profession is about up-dating your knowledge. When you decide not to do that anymore it's time to retire. … I would be more than happy to learn more….."*
>
> *(CP10,6:40-41)*

Several participants gave clear examples of what they would like to achieve at the training session, such as helping them to change their practice to benefit patients. Here, one participant stated the need for a useful training session in order for him to adapt his practice:

> *"I would like to see clearly of what I am doing wrong now and examples of research that provides the evidence of how to do it better. I think that is the only way I could think about changing what I do now"*

(CP17,8:161-163)

Another participant stated that they always tried to put in practice what they had learnt from any training:

> *"I would attend a training event, yes…I am happy to learn new things all the time then I like to see how it works back in practice"*

(CP13,6:124-125)

Others also talked about learning that could be used in practice. CP19 recalled a training event she went to recently and was not able to transfer her learning to help patients. She reported having to sit for two and a half hours and came away wondering what she had learnt and how frustrated she felt. She strongly expressed that she would like to be able to use the knowledge from the training event to help her patients:

> *"… I really would like the training event to help me help my patients…you know find new ways to help patients be better at understanding their medicines"* **(CP19,7:129-131)**

Design.

During the course of the interviews, participants expressed what content they would like to see in the potential training session on health literacy. Many expressed that they would like something that addressed all learning styles:

> *"It would be ideal to have [the session] as listening, watching and doing something"*
>
> **(CP14,9:180)**

Several participants commented on the theory of health literacy and how they needed to understand this first before they could relate it to their professional role:

> *I would also like to see some theory behind health literacy … you know the basics … to understand it all before I can start to make any changes in what I do…*
>
> **(CP7,8:179-81)**

When asked about the content of a training course, CP14 talked about wanting to understand about the local picture and any issues with health literacy near his pharmacy

> *"need to know the problems in my area"*
>
> **(CP14,9:181)**

In summary, many participants were willing to attend a training session in order to further their understanding of health literacy. Many gave ideas of the content they would like to see with several expressing a desire for the theory of health literacy in order to relate it to their practice. Most importantly many participants wanted

the contents of a training session that could be used in order to help their patients understand their medicines better.

5.4 Summary from Phase One Interviews

In answer to objective one - 'explore community pharmacists' awareness and understanding of health literacy' it appears that community pharmacist participants within Stoke-on-Trent and Staffordshire area have a lack of awareness of the health literacy concept. All community pharmacist participants had a story to tell about the patients they see and the confusion they exhibit. One main area that was apparent was that community pharmacists spend time working out and supporting patients' problems with medicines. Many medication-literacy issues identified in the individual interviews are modifiable with changes to the healthcare system, healthcare professionals, media and advertising. Strategies to identify patients that are confused came from the participants having a vast pharmacy experience or 'sixth sense'.

The issue of understanding which patients may be confused with medicines and information is clearly an important one. Participants' accounts suggest that there are a few population groups that community pharmacists do not relate medicine confusion with. Furthermore, there was an apparent stigma with low social economic status, educational attainment and rough speech and dress.

Although participants had no awareness of health literacy, after reading the definitions provided it was clear that they understood the impact in relation to pharmacy and the role of community pharmacists. Furthermore, participants were mindful that community pharmacists need to ensure they adequately address the

needs of patients. Given this, participants showed a strong desire to learn about health literacy and to use the learning to better their professional practice.

5.5 Summary of Chapter

This chapter has presented the findings from Phase One interviews in relation to health literacy knowledge and understanding. The chapter has presented the themes and associated subthemes of 1) confusion seen in patients visiting the pharmacy 2) Recognising confusion in patients 3) Community pharmacists' perceptions of patients likely to be confused 4) Awareness and understanding of health literacy 5) desire to learn.

CHAPTER 6: FINDINGS FROM NGT

Chapter Overview

This chapter will present the findings of Phase Two of the study. It begins with a summary of the participant sample from the NGT session, showing that participants were from various healthcare backgrounds, all with a special interest in health literacy. The section then presents the findings from each stage of the NGT and the final ranked five health literacy intervention decided by the panel.

6.1 Introduction

One NGT session was held in May 2017. The session lasted for 2 hours and followed the principle stages of a standard NGT.

6.2 Participant Profile

The panel consisted of seven participants from different disciplines, all having a special interest in health literacy, this also included the patient lay member. Table 17 outlines the participant's occupational backgrounds.

Table 17. Occupation of Participants in NGT Session

Participant	Occupation
Participant one	Dental Educator
Participant two	HealthWatch member
Participant three	Community Health and Learning foundation
Participant four	Academic
Participant five	Health Improvement & local authority health literacy lead
Participant six	Communications coordinator
Participant seven	Patient lay member
Total 7	

6.3 Findings from each Stage of NGT

6.3.1 Introduction Stage

At the start of the NGT, I introduced the concept and outlined the session to participants, along with what was expected of them during each stage. This was achieved by the help of a pre-prepared PowerPoint presentation. In this stage I began to tell the participants that I had already completed an internet search of all the health literacy interventions available (appendix 9), whereby helping them to decided which of these could be used in the community pharmacy setting.

At this point P4 voiced a concern that she did not want to see the list and would prefer to decide without having a pre-determined list. P2 agreed by saying that the group were health literacy experts and so would be able to create a list without any external input. As the NGT is a consensus methodology I decided to put the idea, from participants P4 and P2 to a private vote. I handed around post-it notes and asked all participants to write 'yes' to use the pre-determined list of interventions or 'no' if they wanted to 'go-it alone'!

Once the all participants had voted, I collected and counted the post-it notes. Participants unanimously voted not to use the list that I had generated, and would rather use their own knowledge and experience of health literacy interventions.

6.3.2 Stage One and Two

Stage one of the NGT session was the silent generation stage which produced ideas, options or solutions from each participant to address a certain question. For this study the question was "Which interventions for health literacy do you think could be used by community pharmacists in their day-to-day practice?"

During Stage Two, ideas generated silently in stage one, where collected from each participant in a round robin manner. Table 18 summarises the results collected. From this table it can be seen that ten round robins where performed before all participants exhausted their ideas.

It is noted that opinions of participants were similar at the start of the round robin stage. Whereby, many participants stated either 'Teach-Back' or 'It's OK to ask' as an intervention that could be used the community pharmacy setting. In later rounds, participants started to differ in their ideas. For example, during round 7 each participant generated a different idea: draw diagrams, chunking information, show and tell, living room language, help patients with paperwork, medicines charts and use pictures.

Table 18. Ideas Generated in Stage One and Collected in Stage Two

Round robin	Participant 1 (P1)	Participant 2 (P2)	Participant 3 (P3)	Participant 4 (P4)	Participant 5 (P5)	Participant 6 (P6)	Participant 7 (P7)
1	Teach-Back	Ask me 3	Teach-Back	It's OK to ask	Ask me 3	Teach-Back	Teach-Back
2	Ask me 3	TB	It's OK to ask	TB	TB	Ask me 3	It's OK to ask
3	Chunk-and-Check	Medicine label design	Use pictures on leaflets	Pill card	It's OK to ask	No medical jargon	Pill card
4	Living room language	MAR charts	Limit to 3 messages	Use simple language	SMOG	Pill card	White space on labels
5	It's OK to ask	It's OK to ask	No complex words	Use information with pictures	Plain language	Draw pictures	Chunking and checking
6	Speak slowly	Use YouTube clips	No medical words	No health jargon	Limit directions to 3	Use simple language	Show and tell
7	Draw diagrams	Chunking information	Show and tell	Living room language	Help patients with paperwork	Medicine charts	Use pictures
8	Use graphic	Speak slowly	White space on labels	Chunk-and-Check	-	Simple language on labels	Slow down with instructions
9	Encourage 'do you have any questions for me?'	Show and tell	-	-	-	Use open ended questions	Use common known words
10	-	Limit instructions to 3	-	-	-	Video or DVD	-

In total, 36 ideas were generated. However, some of these ideas were every similar, for example, P2 wrote down chunking information where P1 wrote Chunk-and-Check. Thus, this is the reasoning for Stage Three in the NGT.

6.3.3 Stage Three

In Stage Three; discussion/clarification stage, participants were asked to discuss the ideas generated, whereby, clarifying the meaning of ideas and eliminating any duplications or redundancies and altering any similar ideas.

Table 19 shows how duplications where grouped together and ideas eliminated by participants. The table also shows comments generated by the group during this stage. For example, the ideas generated about medicine label design, white space and simple language on labels was finally decided, by participants to be known as label design. This issue was resolved in three ways, which finally allowed a consensus agreement:

- P4 argued that the ideas generated all related to labelling problems, and so each was sufficient to be included in the label design.
- P7 discussed the relevance of including simpler language on labels, and the fact, they had had many patients comment on the use of odd wording used on medicines labels generated by pharmacists. One example the patient lay member gave was that a patient was confused by their label that said 'take 1 3 times a day', and were they to take 13 each day or one tablet three times a day.
- P1 in the group mentioned the issue of white space. In the case of commonly used antibiotics prescribed by dentists and dispensed by pharmacists, there was little room on the label to give all the cautionary

warnings clearly. This was particularly noticeable with metronidazole,

where a lot of warnings were needed on the label

Table 19. Stage Three - Clarification of Generated Ideas

Generated idea	Duplications for elimination	Comments
It's OK to ask	Do you have any questions for me	There was considerable discussion around the community pharmacists using the local initiative of 'It's OK to ask'. However, a few participants stated that this was in place of the national initiative Ask me 3. Further discussion took place with P6 stating "if think we should use both initiatives. The reason is that 'It's OK to ask' is the start of the patients process that then leads them to thinking about asking 3 questions' after some thoughts by the other participants they agreed with this statement. P3 stated "…..this is the initial phase of ensuring the patients that it is fine to ask questions and the health care professional is ready to answer. Once the patients understand this then they can start to think about the 3 questions to ask……." P3 then stated that the local initiative would have postcards, and on the back would have space for the patients to write three questions for their healthcare professional and so Ask me 3 would not also be needed in this project.
Ask me 3	N/A	As above. The participants came to the decision that 'It's OK to ask' and 'ask me 3' were two different ideas
Chunk-and-Check	Chunking information Chunking and checking	All participants agreed that the correct terminology was 'chunk and check' P2 and P7 said they had also known it to be called chunking etc.
Limit instructions to 3	Limit directions to three Limit messages to 3	Participants agreed that this was about ensuring that's were not given too many messages or instructions. all agreed that 3 was appropriate.
simple language	No medical words No health jargon No medical jargon Living room language Use common known words Plain language No complex words	P1 mentioned that this is how they actually speak to the patients and give them information. P4 agreed with this and mentioned that it should not be confused with the way they speak such as slow, clear and structured. The participants all agreed that there was a lot of duplication with this idea and came to a consensus that use simple language would cover all generated ideas.
Speak slowly	Slow down with instructions	The group decided that these two were the same and it was about how slowly the community pharmacist spoke to the patient
Use pictures	Use card with pictures Use graphics Draw diagrams Use pictures on leaflets	P5 discussed that any idea that used pictures, graphics, diagrams are the same. P7 agreed to this "…….irrelevant of how the pictures or diagrams are used, by this I mean on paper, leaflets, cards ect the idea is the same….use of images to help and promote understanding"
TB	N/A	The participants agreed that there was no overlap or duplications with this term or idea

Label design	Medicine label design White space Simple language on labels White space on labels	P6 asked for clarification on what was meant by 'white space'. P3 discussed their thoughts around the labels produced by pharmacies and said "……information seems to be rather condensed into a small area with little white space to help with legibility and readability'.. P7 also had the idea of white space on labels and so contributed to the discussions "…..I also think that in order for patients to be able to take medicines better and safely the labels needs to be improved and white space is a key area for this improvement" This was then clarified by the group to mean that increased white space was needed on dispensing labels P2 also clarified their thought on label design by stating "labels should be designed better to have the instructions in bold and stand out where as now some seem to have the address of the pharmacy that is the most prominent feature" The participants decided that this intervention would be known as label design as this would cover multiple areas on the label
SMOG	N/A	P4 discussed the fact that community pharmacists may not use this as they tended not to produce their own information leaflets. The facilitator stated that the idea had still been generated and that this stage was just for clarification and not for decided on what was a good or bad idea. The participants agreed there was nothing to clarify and no duplicates.
Pill card	N/A	P1 asked for some clarification on this as they did not clearly understand what it was. P7 explained what a pill card was even though they had not seen one 'in real life' they had seen one on the internet and liked the idea. The participants agreed that there were no duplications with this idea.
MAR charts	Medicines charts	P6 was asked by the participants to clarify whether this meant MAR charts or pill card. P6 stated that their idea was in fact MAR chart. Participants agreed that the wording should be changed and that MAR chart was the known name given to this intervention
Visual recordings	You-tube clips DVD/video	The group decided that any type of recordings that show a visual display would be under this heading
Show and tell	N/A	P3 asked if this was the same as Chunk-and-Check. After some discussion within the group the participants agreed that this was similar but not the same and should be categorised as a separate idea.
Use open ended questions	N/A	The participants agreed that there were no duplications with this idea.
Help patients with paperwork	N/A	The participants agreed that there were no duplications with this idea. P5 explained that this was help with hospital letters or ordering prescriptions etc

At the end of Stage Three a finalised list of generated ideas totalled 16 (Table 20). The final list was written on a flipchart with an alphabet letter assigned to each idea.

Table 20. Remaining Ideas After Editing

Generated idea	Assigned Letter
It's OK to ask	A
Ask me 3	B
Chunk-and-Check	C
Limit instructions to three	D
Simple language	E
speak slowly	F
Use pictures	G
Teach-Back	H
Label design	I
SMOG	J
Pill cards	K
MAR charts	L
Visual recordings	M
Show and tell	N
Open ended questions	O
Help patients with paperwork	P

6.3.4 Stage Four

Stage Four of the NGT process was for ranking the final 16 generated ideas. A ranking sheet (appendix 10) was used for participants to rank the top 10 ideas by

writing the number denoting the rank of the option beside the letter identifying the

option. The most important option had a ranking of 10 with the least being 1.

Table 21 shows the scoring by each panel member.

Table 21. Scoring of Ideas

Idea	Letter	Participants							TOTAL
		P1	P2	P3	P4	P5	P6	P7	TOTAL
It's OK to ask	A	10	10	9	10	9	10	10	68
Ask me 3	B						4		4
Chunk-and-Check	C	9	7	8	9	8	8	8	57
Limit instructions to three	D	5	4	3	5	3	5	1	26
Simple language	E	6	8	7	7	7	7	7	59
speak slowly	F	2	3	4	4	4	3	4	24
Use pictures	G	7	6	6	6	6	6	6	43
Teach-Back	H	8	9	10	8	10	9	9	63
Label design	I	4	5	1	3	5	2	5	25
SMOG	J								
Pill cards	K	3		5		2			10
MAR charts	L								
Visual recordings	M	1			1				2
Show and tell	N		2	2	2			2	8
Open ended questions	O		1						1
Help patients with paperwork	P					1	1	3	5

6.3.5 Stage Five

In Stage Five the final top five interventions were reported to the participants on a flipchart (Table 22). All participants in the group concluded that the five listed would go forward to be used in the study.

Table 22. Final Top 5 Items

Ranking	Idea	Score
1	It's OK to ask	68
2	Teach-Back	63
3	Simple language	59
4	Chunk-and-Check	57
5	Pictures	43

6.4 Summary of NGT Findings

The NGT achieved the aims of setting a consensus for which health literacy interventions would be acceptable for use in the community pharmacy setting. The consensus was reached by the group in that five interventions would be suitable for use in the community pharmacy setting. The five interventions are; It's OK to ask, Teach-Back, simple language, Chunk-and-Check and pictures.

6.5 Summary of Chapter

This chapter has presented the findings for the NGT. Each stage of the NGT was presented in turn and the final generated ideas by the panel was given; It's OK to ask, Teach-Back, simple language, Chunk-and-Check and pictures.

CHAPTER 7: FINDINGS FROM TRAINING SESSION

Chapter Overview

This chapter is structured around two main areas; the outcomes of the planned instructional design of the training session, and the training session evaluation. The evaluation section is presented as firstly, the results from the twenty-one community pharmacists which attended the health literacy training session and the evaluation form they completed immediately after the session. Secondly, the evaluation from the interviews some months later (during Phase Four of this study). I have chosen to put these findings in this chapter, rather than the next chapter that presents findings for Phase Four, as these interview quotes form part of the evaluation of the training session.

Finally, the chapter ends by a summary bringing together the evaluation form and interviews, which outline the community pharmacists' views with regards to refining the design of the training session and materials used to support the session.

7.1 Outcomes from the Instructional Design

Appendix 13,14 and 15 shows the PowerPoint presentation, workbook and facilitators guide respectively that was designed and used in the training session. The following section discusses the outcomes from each level of Gagne's[226] nine specific events of instructions.

Level 1 Gaining Attention

The learner's full attention and interest was captured so learning can begin. In this present study, this was achieved by placing discussion boards around the refreshments area which asked attendees to write their thoughts to the questions posed. When the community pharmacists were seated and ready to start the session, I informed them that they would have the questions answered by the end of the training session. Furthermore, the first few slides also gained their attention as the PowerPoint presentation projected examples of difficult to understand instructions for patients. Both the discussion boards and the first few slides gained the attention of the community pharmacists in a positive manner. Furthermore, by starting the session with medicine related slides, it hopefully gave each community pharmacist a reason to be attentive and to participate during the training session.

Level 2 Informing Learners of the Objectives

For this stage I ensured each learning objective was clear and specific with expectations that were measurable and achievable[230]. This was to help the learners understand what they need to learn and why they are about to learn new knowledge. For example, the objectives stated 'you will be able to define health literacy as opposed to 'understand health literacy. The objectives could have been adapted in the actual training session to aid meaningful interaction and learning experience[226] thus, I asked them to consider which, if any, they feel they could already achieve at the outset. This further helped me to identify areas where prior knowledge did or did not exist.

Level 3 Stimulating Recall of Prior Learning

In relation to prior learning from the delegates, this was addressed in Phase One of the study, where interviews of community pharmacists establish their level of prior knowledge of health literacy. However, it should be noted that some of the attendees were not the same participants that took part in Phase One therefore, it was still important to understand the audiences' prior knowledge. Therefore, activity one in the training session asked attendees to identity skills and abilities that their patients need to be able to understand medicine taking. This was an interactive session, in which community pharmacist's experiences from their day-to-day practice were recalled thus, heighten the relevance and building knowledge. This activity also gave me an insight into the community pharmacist's perceptions about patients and their skills.

Level 4 Presenting the Stimulus Material

Presenting the content of the training session in an effective, logical and meaningful manner[227] is an important part of the design. This was achieved by ensuring the session was in a logical order, starting with the simple concept of the theory of health literacy and moving on to more difficult concepts such as consequences and how community pharmacists could help, allowing the community pharmacists to learn one concept at a time and building on their prerequisite knowledge[231]. Furthermore, the community pharmacists were guided through the session by interactive means targeting visual, auditory and kinetic learners whereby, the session used a variety of different techniques to suit learners with different learning styles. For example, the training session used YouTube clips, PowerPoints, reading, listening and discussing. Therefore, it was hoped that community pharmacists' attention, participation and contribution would be maintained.

Level 5 Providing Learning Guidance

This training session provided community pharmacists with activities and aids could ensure what had been presented to them would be stored in their long-term memory[231]. In the present study, this was achieved by including short guided activities, role plays, case studies, guided discussion and visual prompts from videos. Guidance for the activities were given both on the PowerPoint presentation and in their workbook, where full instructions were given on how to complete the activity. Furthermore, when the concept of Teach-Back was discussed in the session, a visual example via video was shown on how to deliver the concept successfully. This gave the community pharmacists opportunity to observe an expert, take notes and ask questions. Furthermore, when the community pharmacists were asked to take part in the role play activity, they had a role model on which to base their learning and have a better understanding of how to communicate during their role plays.

Level 6 Eliciting the Performance

During the training session the attendee worked in groups on activities, along with individual working in other activities. By doing this it was hoped that the community pharmacists apply the new knowledge and skills that have been taught, as this allowed the community pharmacists opportunity to interpret their new knowledge and ideas. For example, activity 2 was a small group discussion, in which the community pharmacists made a list together about their ideas in relation to consequences of limited health literacy on patients using pharmacy and medicines. Another activity to apply the new knowledge was where the community pharmacists took part in a role play activity to practice the Teach-Back concept.

Level 7 Providing Feedback about Performance

In the present study, I provided informative feedback to the community pharmacists after each activity so that corrections to misunderstanding could be resolved. By doing this it was hoped it would help community pharmacists improve their knowledge around the subject matter.

Level 8 Assessing Performance

At the end of the training session I asked the community pharmacists to relay what they have learnt, based on the learning objectives set at the beginning[227], and gave objective feedback to their responses. This allowed the community pharmacists to understand where they may have not mastered new knowledge or some of its content.

Level 9 Enhancing Retention and Transfer

This training session was designed to ensure community pharmacists transferred the learning to their day-to-day practice. This was achieved in several ways. Role plays provided a safe environment to practice newly learnt skills and peers could provide feedback on how they performed. The pocket-sized card (appendix 16) which outlined the key points of health literacy and the health literacy interventions that could be used, during their working day, as an aid for knowledge retention and transfer. The workbook supplied could be used as a reference source, again, enabling transfer and retention of learning.

Overall, the instructional design of the training session, with the organised descriptions of activities and resources needed to guide a group toward specific learning objectives, proved to be successful. Although it took time to design and

plan the training session, it did help to visualise each step to ensure I had thought about everything and that I presented the material in a logical order. It also allowed me to prepare for points that the attendees might find difficult to understand.

Furthermore, after the training session, I could use my instructional plan to ascertain what went well, and what may have been improved upon therefore, allowing the adaption for future training sessions. Finally, the training session plan would be useful if a substitute facilitator was used to deliver the session.

7.2 Evaluation

This second section is devoted to analysing the evaluation data gathered about the training session. The purpose of exploring the attendee's perceptions of the training course are two-fold. Firstly, to evaluate the effectiveness of the teaching sequence and whether the session made sense to attendees. Secondly, whether the training session contents needed to be refined in any way. The second section discusses the quotes from the interviews. As these interviews took place two months after the training session and the attendees would have had some experiences using the knowledge and materials from the training session, I have called this particular section of the evaluation 'experience evaluation'.

7.2.1 Evaluation Immediately After the Training Session

Pharmacists were asked to evaluate their agreement or disagreement with the structure and contents of the training session, using a five-point Likert scale (strongly disagree, disagree, neither disagree or agree, agree, and strongly agree). It can be seen from Table 23 that no attendees at the training session

disagreed and strongly disagreed with any of the questions posed on the

evaluation sheet.

Table 23. Evaluation Sheet Results

Statements	Strongly disagree	Disagree	neither disagree or agree	Agree	strongly agree
The objectives of the training were clearly defined					21 (100%)
The training course met my needs and expectations				18 (85.7%)	3 (14.3%)
The content was organised and easy to follow				2 (9.5%)	19 (90.5%)
The materials and handouts were useful				2 (9.5%)	19 (90.5%)
Participation and interaction were encouraged					21 (100%)
The trainer was knowledgeable			1 (4.8%)		20 (95.2%)
The time allotted for activities was sufficient				17 (81%)	4 (19%)
The training room was comfortable			6 (28.6%)	2 (9.5%)	13 (61.9%)
The PowerPoints were readable and organised				2 (9.5%)	19 (90.5%)
The topics covered were relevant				1 (4.8%)	20 (95.2%)
I am now confident to support patients with limited health literacy			13 (61.9%)	5 (23.8%)	3 (14.3%)
The training programme has improved my knowledge of health literacy			2 (9.5%)	8 (38.1%)	11 (52.4%)
In general terms I was satisfied with the training course				2 (9.5%)	19 (90.5%)

From the table it can also be seen that attendees either agreed (81%) or strongly

agreed (19%) that the time allotted for the activities was sufficient. In addition, all

attendees either agreed (9.5%) or strongly agreed (90.5%) that the materials and handouts were useful.

When asked about their knowledge and confidence in relation to health literacy 52.4% strong agreed and 38.1% agreed that their knowledge had improved. However, 61.9% of attendees said they neither agreed or disagreed with being confident in delivering support to limited health literacy patients.

The evaluation form asked attendees if they had heard of health literacy before attending the training session. From Figure 13, it can be seen that 15 (71%) pharmacists had heard of the term before attending the event. This was due to the fact these 15 attendees had been involved in Phase One of this study.

Figure 13 Pharmacists Heard about Health Literacy Before Training Session
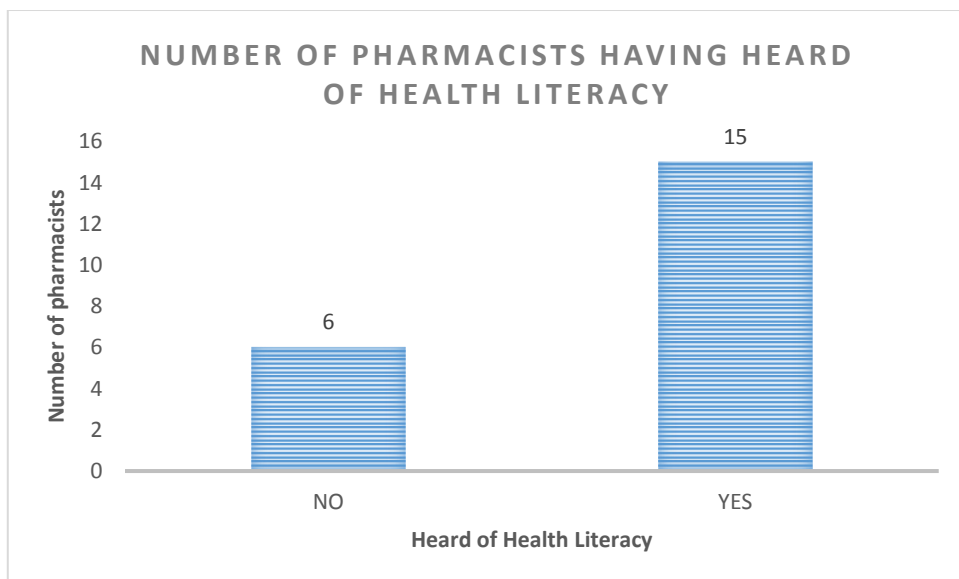
The evaluation sheet gave the opportunity for pharmacists to add comments *'Would you like to make any further comments about the training session?'*. Seven (33%) out of the 21 attendees left a brief comment. (Table 24)

Table 24 Comments from Attendees

Pharmacist	Comment
PH1	great presenting skills
PH4	really enjoyed the session
PH6	can't wait to start using what I have learnt
PH8	well organised and easily grasped
PH11	learnt so much
PH15	great evening and learnt a lot
PH20	very relevant

7.2.2 Experience Evaluation - Interviews

This section presents the quotes from interviews with the participants that attended the training session. These interviews took place two months after the training session. Part of the training session evaluation was to interview the participants to ascertain the effectiveness of the training session and materials once they had had time to reflect on the training session and use the training materials. Questions were asked in the interviews about their expectations, materials, activities, knowledge and any improvements. By asking these questions the following research questions was addressed:

- Develop and deliver a pharmacy-specific training programme to address health literacy awareness and introduce health literacy interventions (Phase Three)

Eleven community pharmacists that attended the training session were interviewed. Interviews took place between December 2017 and January 2018 and where recorded and lasted approximately 50 to 60 minutes. All interviews took place in the pharmacy. Findings from these interviews are now discussed.

Many participants reported how they were unsure what they expected from the training session, as they did not really understand much about health literacy:

> *"…not sure what I was expecting really … just wanted to learning something new I suppose…"*

(PH8,1:5-6)

Others, who had taken part in Phase One interviews, had some expectations and were happy with the training course:

> *"I had a few hopes … based on the interview I did with you… I know what I wanted to learn… and yes I was happy that it covered that and I learnt a lot from the event and have put lots of it into practice"*

(PH6,1:6-8)

This suggests that although learning outcomes were given on the invitation/advert for the training session they needed to be clearly linked to pharmacy practice. In addition, a small synopsis on the advert may have been useful.

During the interviews, participants were asked if the training materials had been useful. Although this had been asked on the evaluation sheet, it was felt that after the training course attendees may have looked at them again and possibly reflected differently. The majority of the interview participants stated that they liked the workbook and would use it in the future:

> *"I like the workbook … I keep adding notes to it…you know*
>
> *when I have a patient that is struggling with directions I am*
>
> *giving. I look in the workbook to remind me … I make small*
>
> *notes about how I dealt with the patient … I mean to say help*
>
> *them better with health literacy …"*

(PH10,3:55-57)

Staying with the materials and workbook, three participants mentioned they would have liked the front covers of the workbook to be laminated so it didn't get ruined in the dispensary. One participant mentioned a more durable version, so he could carry around with him. Suggesting that many of the pharmacists used this workbook in their day-to-day practice as a reference source. Seven pharmacists also stated that a table of contents at the front would helpful:

> *"I have to keep flicking the pages to find what I want …*
>
> *so I think an index or, you know …er…*
>
> *contents page would be helpful"*

(PH1,2:32)

Two other participants mentioned having the handouts incorporated into the actual workbook, making it easier to keep all the documents together.

> *"… what would be a good idea is that I stapled the handouts you*
>
> *gave us to the back of the workbook … that way I can keep*
>
> *everything together"*

(PH11,4:81-82)

Again, suggesting the participants saw the workbook as a reference source they could keep and use.

A number of participants commented on the pocket guide, given to them at the end of the training session. Many stated it was handy to keep on the computer in order to remind them to ensure label instructions were clear. Others situated the guide on the cash register, as a prompt to explain things carefully to patients.

When asked about how the training session ran with the regards to the order of learning objectives and activities, participants said they were happy with the order or arrangement of the evening. Many commented on how the content was *'easily grasped'.* Here, one pharmacist talked about how she found the order of the session:

> *"I enjoyed it … I thought it worked well … it was good to learn a bit of the theory first and then what it meant for me…you know … my area and my patients I service … once I understood this then the activities seemed logical to do"*

(PH4,1:29-31)

When asked about whether the training session improved their knowledge of health literacy all participants stated that it had helped them to understand the concept of health literacy and how it could be applied to community pharmacy:

> *"I learnt so much … and how it could be used by pharmacy …"*

(PH5,1:6)

> *"I never knew anything about this health literacy … it really made me think how I could help patients in a different way……."*

(PH7,1:2)

When asked about the mode of delivery, all participants reported that face-to-face was the best option for them. Participants mentioned that some could be learnt by distance learning, such as the facts and figures however, they all reported that the activities and general sharing of ideas with peers would be best via a face-to-face environment.

> *"definitely face-to-face … we could not do some of the activities if we did not have our colleagues there"*

(PH6,1:9)

7.3 Summary of Training Session Findings

To conclude, the presentation of findings relating to the training session seems that it was well structured, in other words, the sequence of materials was easy to follow for attendees. However, it appeared that there were three practical issues with the workbook. Firstly, a table of contents would have been a logical addition in order for the learner to navigate the workbook more efficiently. The second issue related to the handouts and developing them as part of the actual workbook. This would allow the learner to keep all the materials in one place. The third practice issue found with the workbook was its lack of durability and solid structure. A laminated, wipe-clean cover could easily be added to help the learner use the workbook at their place of work without the worry of it being damaged.

7.4 Summary of Chapter

This chapter has presented the findings for the pharmacy specific health literacy training session. This was presented in two sections; results from the evaluation completed directly after the training session and quotes from the interviews two months later (during Phase Four of this study). The chapter ends by giving a summary of these two findings with regards to refining the design of the training session and materials.

CHAPTER 8: FINDINGS FROM PHASE FOUR INTERVIEWS

Chapter Overview

This section presents the findings from Phase Four interviews. The first part of the interviews with participants discussed the training session and these findings have been presented in chapter 7. This chapter, therefore, presents the accounts given by participants in relation to the usability of the health literacy interventions that were generated by the NGT (Phase Two, Chapter 6) and delivered in the training session (Phase Three, Chapter 7).

8.1 Introduction

The participants for this Phase (Phase Four) were community pharmacists that had attended the training session two months prior. In this section the participant's demographics are described. Moving forward the findings from the interviews offered. In total, 11 face-to-face interviews were conducted and tape recorded.

As with Phase One, each participant excerpt is presented by giving the community pharmacist a number, for example, PH1. Page and line numbers from the interview transcription, for example, 7:9-11 are used to ensure a robust audit trail. Ellipses (…) indicate omitted material and brackets [ ] indicate material that has been added by the researcher to increase the readability of the excerpts.

8.2 Participant Profile

Six females and five males, with between 4 and 29 years of experience on the pharmacy register participated in the face-to-face semi-structured interviews. Two participants were locums, the rest either being owners, Managers or 2nd pharmacists. Nine of these participants had been part of Phase One interviews. The characteristics of the 11 community pharmacists interviewed individually are summarised in Table 25.

Table 25. Profile of Community Pharmacists Interviewed

Community pharmacist (interview number)	gender	Years on register	Status within the pharmacy	Pharmacy size	location	Pharmacy type
PH1*	Male	4	Locum	Small	surgery	Independent
PH2*	Male	20	owner	small	village	Independent
PH3*	Male	8	2nd pharmacist	large	town	multiple
PH4	female	6	Manager	medium	town	multiple
PH5*	Male	15	Manager	small	campus	multiple
PH6*	female	9	Manager	medium	surgery	multiple
PH7*	female	22	Owner	small	village	Independent
PH8	Male	29	Manager	medium	town	Independent
PH9*	female	26	Manager	large	supermarket	multiple
PH10*	female	10	Locum	large	town	multiple
PH11*	Female	15	Owner	small	town	Independent

*denotes the participants taking part in Phase One interviews however, assigned a different number for example PH11 would not necessarily have been CP11 in phase one

8.3 Themes Identified

Themes identified (Figure 14) are drawn from responses of the 11 individual interview participants who gave accounts of their experiences of using health literacy interventions with their patients. When asked the question 'Talk me through which health literacy interventions you have used and not used', from the outset each participant discussed their findings in the same way, in that they started to talk about each intervention in turn. In addition, they talked about the positive way in which they used the intervention with their patients. In discussing the positive way in which the health literacy interventions had been used, I had to ask them to highlight for me any problems or issues they had encountered. Thus, the themes and subthemes from these interviews were easily derived from the interviews due to how the participants structured their feedback in the interviews.

Figure 14. Themes and Subthemes
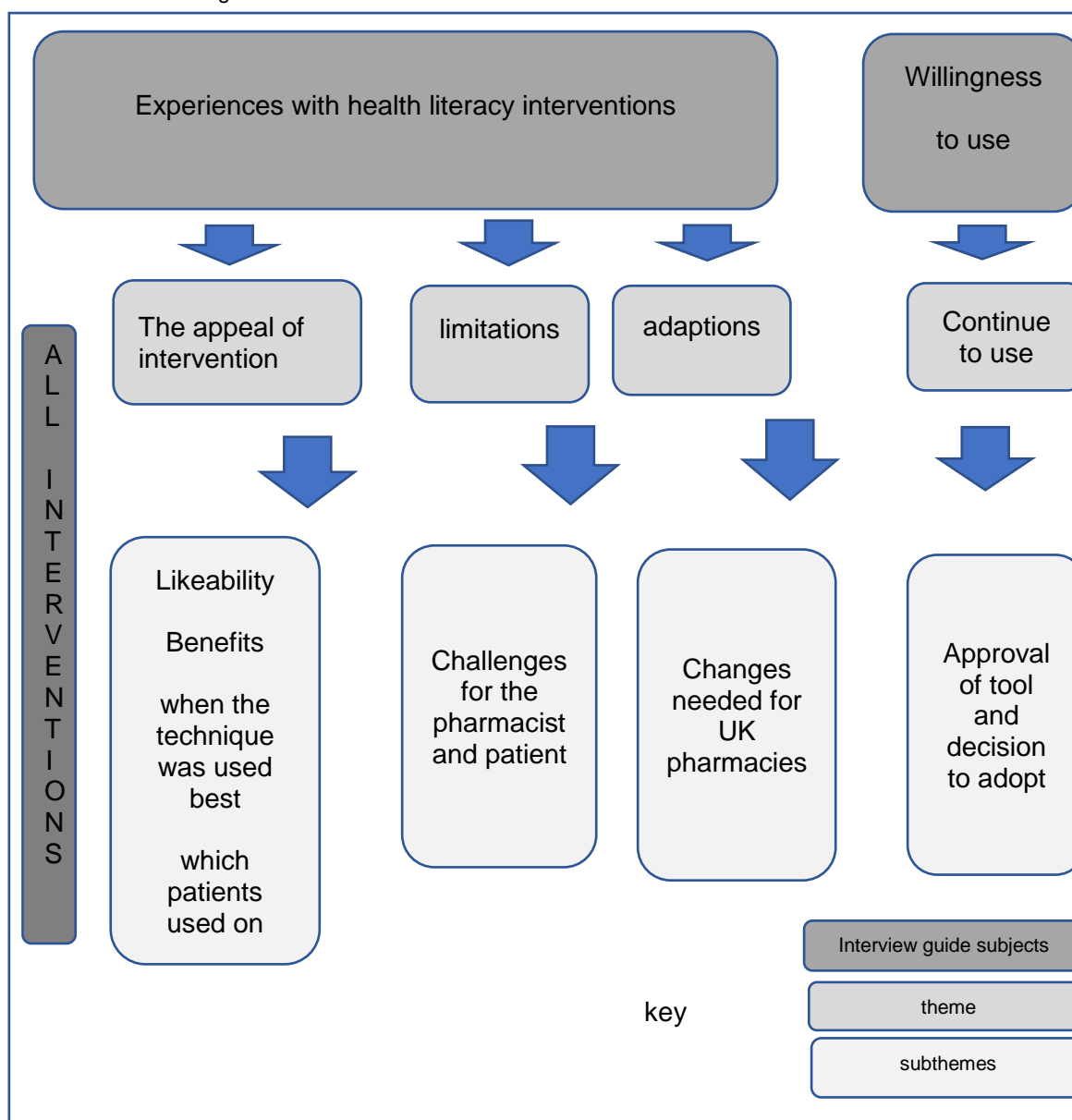
8.3.1 Teach-Back

Without any prompting by me at the start of the interviews, all pharmacists began by discussing the Teach-Back method suggesting either that this intervention had the most impact on them during the training session or it was the intervention that was most 'do-able' for them. All 11 participants reported having tried this technique during the previous two months. It was repeatedly reported by many participants that this particular intervention was the one that captured their interests during the training session and that they started to think about Teach-

Back very next day, at work. For example, PH8 described how he went to work the next day and told his staff about a new concept he had learnt and wanted to start using it with his patients. He later discussed how, once he had practiced the technique, he trained his staff also:

> *"I found it [Teach-Back] so useful that I decided to train the dispensary team also ….that way we are all doing the same thing and patients will just get use to it and think it's normal"*
> **(PH8,4:83-84)**

One theme common to all participants was that they appeared to like the Teach-Back intervention, and now used it most of the time in their practice. This suggests that through the training session, and their experience of using Teach-Back, participants had gained a good understanding of the intervention, how it should be used and the benefits. This also suggests it was this intervention which they found best related to their practice and simplest to use.

The following quotes illustrates these points. The first came from a participant who had been qualified for over 26 years, and had been on many training courses about consultation and communications skills.

> *"...been on lots of courses to help pharmacists communicate with patients better over the years…I use it[Teach-Back] a lot now I have mastered … I like that I have a structured process I can follow now … I can see the benefits from it …"*
> **(PH9,3:42)**

She had a lot of experience counselling patients during her time as a pharmacist. Yet on discovering Teach-Back she could not praise it enough with regards to how it had changed her practice

> *"I love it ...I mean really love it…I feel so fulfilled as a pharmacist, as I feel I am really helping patients to understand their medicines … it's like a breath of fresh air…something so easy to use yet so effective…"*

(PH9,4:88-90)

The second statement came from a younger participant, qualified for 6 years that explained how they had now found an intervention they could "actually use":

> *It is so fantastic ...it's great to be taught something that we can actually use and see working. It's a really easy process to follow once you get use to it"*

(PH4,2:30)

The participant went on to say how they thought it worked by the feed-back from patients

> "patients seem to be satisfied with this new approach I am taking"

(PH4,2:30)

It was commonly reported by participants interviewed that they associated using Teach-Back with increasing adherence in patients, and possibly reducing potential harm with lack of understanding of medicines. Participants mentioned

that by using the intervention they had almost certainly picked up on patients misunderstanding medicine instructions, which could have been detrimental to the patients' health if the medicines had been taken wrong. They mentioned that the intervention allowed them to clarify information for the patients. Here two participants discussed how they detected and prevented important patient misunderstandings:

> *" I am almost certain that using this Teach-Back helped me stop an overdose in one of my patients…well a patient repeated back to me and happened to double the dose from what I said … not sure how that happened? … but can you image if they went home and took that amount…"*

(PH7,5:103-105)

> *"I was pretty sure the patient understood what I was saying but I thought well let's give it a go…let's try this Teach-Back … and oh my God, I then realised how much they [patient] didn't know…its amazing just how much they [patient] miss or miss-hear, I am sure she [patient] would have taken them all in the morning instead of in divided doses"*

(PH3,5:116-20)

Another common theme which participants mentioned was that it also helped representatives understand how to take and use medicines effectively. In addition, three participants also mentioned that it is a good intervention for all patients.

> *"I can use it with any age patients, I think it seems to work with them all"*

(PH1,4:85)

One participant said he had successfully used the intervention on a mother with her child to help them use inhalers and spacer correctly. He discussed how he even used Teach-Back with the 6-year-old child help them understand how to breath via the spacer device:

> *"Its great as you can use it with almost everyone … I had a 6yr old in with Ventolin and a spacer the other day … so I used it [Teach-Back] with her mum first and then, so to include the little girl and used it on her. I got her to tell me how she was going to breath in the spacer … it was really effective…I was really happy how it all went…"*

(PH8,5:106-110)

Four participants mentioned how they used Teach-Back to ensure patients understood complex dose regimes. Patient confusion with numeracy was mentioned in Phase One interviews. All four participants used Teach-Back to address patients who had a reducing dose of steroids and how it helped the patients understand the regime better:

> *"I had a patient on reducing dose steroids and as usual wrote it all down on paper for them. I got them to read it and them explain it back to me … its amazing how many people do not understand numbers … but using this [Teach-Back] then it helped me know they had got it [dose] right"*

(PH10,111:13)

While participants reported many positive things about Teach-Back there were also challenges that they faced. Firstly, participants were unsure as to whether the intervention took longer or not. Many commented on how it shortened the MUR consultation however, some did mention it took them longer. Secondly, it was repeatedly reported that to begin with their confidence in using the intervention was not as they would have liked. Many participants said that they felt they needed to develop the skills more before facing a patient. In a number of participants, they talked about how they used their staff to practice the intervention:

> *"I practiced on my staff first, although this helped me it is still not like using it {TB} on real patients because I explained to my staff what I was doing!"*

(PH5,7:140-141)

Similarly, PH2 claimed to have tried and failed in one consultation which suggests she needed more practice at the training session.

> *"when I used it the first couple of times I didn't get it right … .I remember using it three times in one consultation with a patient …it was awful … I think I felt I came over so patronising, I think I was being too careful about how I said things so it just didn't sound right."*

(PH2,4:82-85)

It was suggested by around half the participants that the intervention was difficult to use in short interventions with patients. This was mainly because there did not

seem to be enough time to engage the patient in the conversation and to initiate Teach-Back when handing out patient's prescription medicines:

> *I have tried it several times when selling OTC the counter medicines or just giving out one or two prescription item … it really does not work … the patients just want to briefly listen and leave … they are not really bothered about getting into too much conversation about what we are giving them…I think they just want to hear the basics, then be on their way …*

(PH11,5:102-106)

The same participant discussed that the intervention was best placed when undertaking a MUR consultation with patients, where a longer dialogue was expected. This was a common view expressed by a number of participants:

> *"the best place to use this [Teach-Back] is during an MUR. We are sitting with the patient for longer and they are expecting to be with you longer and sort of …well be tested on their understanding….I know tested is not the right word but….well they know we are going to check they have understood everything. So, if the patient is having a longer conversation with you I feel it [TB] works brilliantly"*

(PH11,6:127-32)

There were mixed messages from participants about the time the intervention took during their consultations. Some mentioned that no extra time was needed, whereas other clearly mentioned that more time was needed in order to perform the intervention correctly:

> *"Teach-Back can take a while to do right … it you want to check every detail with the patient then that takes time"*
>
> **(PH5,8:111-114)**

An important part of this study was to explore whether health literacy interventions could be used in the community pharmacy setting. With regards to Teach-Back all 11 participants said they would continue to use the intervention now they had learnt it. Many said it would be difficult for them to not to use it now, and that it was now part of their overall consultation skills:

> *"its like second nature now, I don't realise I am using it, I just go ahead and use it throughout the MUR with all my patients … so yes I will continue to use, always"*
>
> **(PH5,6:100-102)**

> *"Of course, I would [use Teach-Back], I can't imagine not using it now"*
>
> **(PH1,5:92)**

8.3.2 Simple Language

All participants reported using this simple language intervention during the two-month period after the training course. There was much similarity between participants in their reported experiences of using this health literacy intervention.

As mentioned in chapter 5 of Phase One interviews, participants believed that patients showed an element of confusion with ordering prescriptions via the new EPS system. In these present interviews four participants mentioned how they used simple language for patients who did not fully understand this EPS process.

One participant talked about how he changed the words into more practical, easy to use words for the patient to understand, such as not using the terms 'download' or 'spine'

> *"I used 'pull from the computer' or 'its [prescription] sitting somewhere between the doctors and us'…"*

(PH5,7:141)

Another participant gave her account of how she helped a patient understand the importance of having a flu vaccine and how it worked.

> *"I used simple terms to explain about the flu vaccine…I said "the flu is a bug and the bug can make you very poorly if it gets into your body. By having this injection, it will help you fight those bugs if they get near you …"*

(PH7,6:107-109)

The majority of participants said they used the intervention to explain dosages of medicines. Here, PH4 related this intervention to counselling patients on dose intervals:

> *"Now instead of saying take one twice a day when giving out a prescription, I tend to say take one with your breakfast and one with your tea or take one at 8am and one at 8pm … I also write this on the label so they can understand it better"*

(PH4,4:88-90)

Another participant explained how he used this intervention to help a patient understand how his heart worked, and therefore how hypertension happened and how his drugs worked. This participant talks about using common words that the patient would understand:

> *"I used the word 'pump' to explain the heart working … I explained the two numbers of the blood pressure as force and pushing against this force…. It's better than saying 'resistance' …"*

(PH8,6:112-115)

Although many reported that this health literacy intervention was an easy and obvious concept, I also noted consistently that participants seem to find it easy to '*slip back*' into medical jargon, with many participants stating that it took a *"little practice"* not to revert back to using difficult words. Some participants also thought they were using uncomplicated words already. To illustrate this point, one pharmacist mentioned how he had to keep telling himself to use simpler words:

> *"I am now constantly looking for plain, simple words to replace what I thought were plain, simple words!"*

(PH1,5:99)

Many participants appeared to acknowledge that this kind of interaction was just about being causal and speaking in simple, plain terms. All participants said this could and should be easily used within community pharmacy. All participants mentioned how simple language should be used on labels, patient information leaflets and any posters they displayed.

All participants agreed that no additional time was needed in any consultation in order to use this intervention, suggesting that there should be no reason why community pharmacists should not adopt this communication intervention.   Many participants said that the intervention could be used in both short, over-the-counter conversations with patients and during a more in-depth consultation, such as an MUR. There was a common theme among the participants interviewed that they would continue to re-address their language to ensure that they use simple words at all times:

> *"… I need to make sure I always check everything I say and make sure words are simple enough for everyone to understand. … you know put right anything I say that is too complicated…layman's terms so they [patients] understand …"*
>
> **(PH11,7:142-44)**

8.3.3 Pictures

Many participants reported that they used this health literacy intervention of pictures on a rare occasion before the training session however, since the training session tended to use pictures and diagrams much more to demonstrate instructions to patients.

> *"I now think about using pictures a lot more than I did before [the training]"*
>
> **(PH2,5:97)**

> *"Before I used diagrams as a last resort…not sure why, just never really thought about them too much"*
>
> **(PH3,6:106)**

It was repeatedly reported by the participants interviewed, that this tool was used in conjunction with Teach-Back rather than a stand-a-lone intervention:

> *"I used a picture with a patient … a clock it was to explain dose times, but I also used Teach-Back to ensure he really understood"*
>
> **(PH9,5:117-118)**

> *"Pictures were really useful with an asthma patient I had…I used them to show how the lungs were inflamed … I then used Teach-Back, really for belt and braces to make sure the patient was clear about what I said"*
>
> **(PH4,6,119-121)**

A similar response from all interviewed, was that pictures were particularly useful with dealing with complex issues for patients.

> *"I tend to use [pictures] when I have something difficult to explain …"*
>
> **(PH10,7:149)**

It was commonly reported in interviews that pictures were used to help patients understand inhaler use. This was previously reported in Phase One interviews

where participants described many issues that patients have in understanding how their inhalers work.

Another common report for participants was the use of pictures to demonstrate doses. Again, a common cause of confusion discussed in Phase One interviews. Here PH6 talks about how she now uses a clock face to help patients understand antibiotic doses:

> *"I now have pre-printed clocks for antibiotics … what I mean is for a antibiotic taken three times a day I have a A4 sheet with 3 clock faces on, one for 7am, one for 3pm and one for 11pm"*
> **(PH6,4:85-87)**

It was commonly reported by community pharmacists in interviews that pictures were used when counselling ethic minority patients, those first language was not English. Again, this was a key theme in Phase One interviews.

> *"I tend to use pictures a lot for my patients who don't speak English very well … I use a picture of a bed for night time doses or I draw food if they need to take with food"*
> **(PH2,6:109-110)**

However, the participant did go on to report that sometimes even these patients did not understand some pictures:

> *"… but I am sure that some of these patients [ethnic minority] still did not understand the drawing".*
> **(PH2,6:111-112)**

None of the participants reported any challenges with this intervention. No-one said it took extra time or effort to produce a diagram, suggesting only simple drawings where used. In fact, one participant described himself as 'not being good at drawing' but recommended the use of simple diagrams. He suggested that patients understand simpler diagrams better and those drawn in front of the patient whilst verbally explaining the information. Not being able to draw particularly well did not prevent this pharmacist from using pictures as an intervention to help limited health literacy patients.

> *"I am not that good at drawing …not one of my strengths, but I think a simple picture would be better for the patient anyway as something too complicated could cause more confusion"*

(PH8,7:140-141)

All participants said they would continue to use pictures and diagrams to enhance instructions to patients. None of them reported the use of drawing pictures as problematic with many participants described how using pictures was now key to their counselling service to patients

8.3.4 Chunk-and-Check

In many of the interviews, I needed to prompt the pharmacist to talk about their experiences of this intervention, which suggested it may not have been as popular as the other methods. Some participants needed a reminder of what the intervention was. However, once discussions started all participants recognised the intervention as Teach-Back broken down into small sections, rather than the name as Chunk-and-Check.

> *"Well it's the same as Teach-Back but just in smaller sections for them [patient] to understand"*

(PH4,6:137)

> *"I don't understand why it has another name, it just Teach-Back but in little bits…or in divided, small sections"*

(PH3,7:131-132)

Many described how they liked using this intervention for complex or long instructions that they needed the patients to understand:

> *"This [Chunk-and-Check] is excellent when I have lots to tell the patient … say when they have a couple of new medicines and I've to tell them the dose, side effects, how to store for each one …"*

(PH7,8:161-162)

As explained, many participants interviewed used this intervention for complex or long instructions. Additionally, many others spoke about how this intervention was useful for elderly patients during an MUR consultation. In general, participants described elderly patients as being more vulnerable to polypharmacy and thus having a lot of information given to them during a consultation with the pharmacist. Participants seemed aware that the elderly may need extra support in remembering information and reported that this intervention was ideal in addressing that support. One participant talked about their experience in using this intervention in one such consultation:

> *"I did an MUR with an elderly lady who had about 8 or 9 different medicines. can you imagine just throwing all the necessary information to her and expecting her to remember it … well I used this [Chunk-and-Check] after each medicine we talked about…I am sure it helped her remember everything much better …"*

(PH11,9:158-162)

As with Teach-Back, many participants stated that they used this intervention during MUR consultations. None of the participants mentioned using the intervention during a shorter, over-the-counter discussion with patients.

Participants did not mention any challenges they faced with using this intervention.

The common theme regarding the usability of this intervention was that pharmacists would continue to implement, as they saw it as an extension or component of the Teach-Back intervention.

8.3.5 It's OK to ask

All but four participants had to be reminded of this concept, even though resources for the pharmacy and their staff, such as posters, pens, badges were given out during the training session. One participant seemed embarrassed as she reported that the resources were still in the boot of her car. Another discussed how he had forgotten that this was one of the interventions to use and reflect upon:

> *"Oh sorry…I though we just needed to wear the badge and put the poster up…I didn't realise it was supposed to make an impact on patients …"*

(PH1,7:151-152).

This suggests firstly, that there was little enthusiasm for the intervention and secondly, that the training session and the pack issued needed to have clear instructions of use and what was expected to be measured.

Those that did use the intervention (four participants), stated that the poster needed to be bigger in order for patients to see it. However, all reported liking the badge and postcards, and said that the local branding was eye catching. Two participants said they doubted that patients really paid any attention to the badges that staff were wearing and perhaps shelf advertising near medicine products may benefit the patients better:

> *"I am not sure patients look at what the staff are wearing … perhaps just the name badge"*

(PH5,9:163)

> "I think better advertising is needed as the patients are not aware of this … what about on the shelves and windows?"

(PH2,7:152-153)

The four participants give an indication that the tool might be good, but one pharmacist mentioned a challenge and although it had not happened to her, she thought it was worth considering:

> *"… we are talking about health literacy here and some patients can not read or write and also may not be able to articulate what they want to say, so why should we expect them to read this postcard and then take in what we are telling them … seems a bit odd to me"*

(PH4,7:148-151)

In a similar vein, PH11 mentions how limited health literacy patients can be afraid of asking questions

> *"These postcards are okay but many patients, and I'm guessing patients with poor health literacy also, do not like asking questions so not sure really if these [postcards] will help … I mean they may still not want to ask anything"*

(PH11,9:168-170)

However, most participants reported liking the badge and postcards, finding the postcards a useful tool to help patients think about questions to ask before an MUR consultation:

> *"While a patient is waiting for me [to undertake a MUR] I get them to look at the postcard and think of three questions they want to ask me … I think it focuses their mind on what is important for them…"*

(PH6,6:110-112)

The participants that did use this intervention said they would continue to display the poster, wear the badge. They reported also being happy to use the postcard

as long as they were provided by the commissioners, rather than them having to pay or print any further supplies.

In sum, this phase of the study explored whether community pharmacist in the UK could use health literacy interventions which have been predominantly designed in the USA. The participants were asked to describe their experiences after using the intervention over a space of two months, after a training course designed to introduce these interventions.

Responses were similar in that all were substantially supportive of Teach-Back, simple language and pictures. All participants interviewed appeared to view these interventions as having a positive impact on patient's knowledge and instructions of their medicines. All participants stated that these interventions could be used with no extra time or resources provided by the community pharmacists.

Issues were identified, particularly with Teach-Back, were that the pharmacists were lacking in confidence to deliver it. This issue of confidence is clearly an important one however, community pharmacists accounts suggests that they are willing to practice and learn the intervention in order to 'perfect' before delivering the intervention to patients. Table 26 gives an overview of each intervention and its perceived use in community pharmacy.

Table 26. Perceived Use of Intervention by Community Pharmacists

Intervention	When would be best to use	Not so helpful to use
Teach-Back	Long consultations ie. MURs All age groups	Short consultations ie. Over-the-counter purchases
Simple language	Explaining technology Long consultations Short consultations	N/A
Pictures	Long consultations Short consultations Complex instructions Devices ie. inhalers	Different cultures
Chunk and Check	Complex instructions Long consultations	Short consultations ie. Single, simple prescription items
It's OK to ask	N/A	If patients can not read or write

8.4 Summary of Phase Four findings

In conclusion, all participants used the majority of health literacy intervention taught to them during the pharmacy training session. Teach-Back seem to have the most impact on the participants with all of them reporting to have used it and that it made a difference to how they counselled their patients. However, participants lack confidence in delivering the new skill of Teach-Back learnt at the training session, and needed to practice before feeling assured they could deliver effectively to their patients.

Participants also liked the use of simple language and pictures to help support patients with their medicine taking. Chunk-and-Check and 'It's OK to ask' did not receive as much attention, by participants, as the other health literacy interventions.

8.5 Summary of Chapter

This chapter has presented the findings from participants that took part in Phase Four interviews. Community pharmacists' experiences with the health literacy interventions have been presented along with their willingness to continue to use these in their day-to-day practice.

CHAPTER 9: DISCUSSION

Chapter Overview

In this chapter, key issues which emerged from the findings are highlighted and discussed in context of the main objectives of the study and then in relation to the literature. The findings place new emphasis on the importance of training community pharmacists on the knowledge and understanding of health literacy, along with making original contributions to the body of health literacy-interventions research, which has largely neglected the community pharmacy setting. The findings are then considered in relation to pharmacy practice implications.

9.1 Introduction

This study set out to explore community pharmacists' apparent awareness and understanding of health literacy, and the usability of health literacy interventions in the community pharmacy setting. The study addressed four objectives, which became the four phases of the study;

1. Explore community pharmacists' apparent current awareness and understanding of health literacy (Phase One)

2. Determine key health literacy interventions that could be used within community pharmacy (Phase Two)

3. Develop, deliver and evaluate a pharmacy-specific training programme to address health literacy awareness and introduce health literacy interventions (Phase Three)

4. Explore community pharmacists' perspectives on the usability of health literacy interventions in practice. (Phase Four)

The objectives gave 'building blocks' for the research. In other words, each objective corresponded to a phase of the study, with each phase building the picture and leading to the next phase. Therefore, one phase could not have existed without the prior phase. For example, firstly, it was necessary to understand what knowledge and understanding the community pharmacists reported having around health literacy, and with the results decided if they needed more support and training about health literacy. Secondly, before the training session could be designed and delivered in Phase Three, Phase Two was needed to decide which intervention tools should be taught, therefore, Phase Two informed Phase Three. In Phase Four the usability of health literacy interventions in community pharmacy was explored. This phase was only possible because the participants had learnt about the interventions in Phase Three and therefore Phase Three informed Phase Four of the study

Following the review set out in chapter 2, chapter 3 went on to discuss the methodology of the study. The metaphor of the 'research onion' guided the discussions of research philosophies, approaches, strategies and time horizons. A constructivist paradigm is adopted for this study. Chapter 4 provided a detailed discussion of the methods, including justifications, participants recruitment, data collection and data analysis. This chapter also gave an overview of the instructional design of the training session in which Gagne's theory[226] was adopted. The session introduced health literacy as a concept and its implications in relation to medication-literacy, along with the health literacy interventions generated by the NGT.

Chapters 5 through to 8 details the results from each phase of the study. Chapter 5 presented the Phase One interviews with community pharmacists to explore their awareness and understanding of health literacy. Five themes emerged from these in-depth interviews; confusion seen in patients visiting the pharmacy, recognising confusion in patients, community pharmacists' perception of patients likely to be confused, awareness and understanding of health literacy and desire to learn more about health literacy.

In chapter 6 - Phase Two, saw a list of health literacy interventions that could be used in community pharmacy, generated by a panel of experts who had insight into the field of health literacy, via the NGT method. Thirty-six health literacy interventions were suggested by a panel of health literacy experts, which then ranked into a final top 5 list namely; It's OK to ask', Teach-Back, Simple Language, Chunk-and-Check and pictures.

Chapter 7 - Phase Three, saw the delivery of a pharmacy-specific health literacy training session for community pharmacists using the interventions identified in Phase Two. The evaluation was in two parts firstly, directly after the training session via an evaluation form and secondly, during face-to-face interviews two months later. All attendees rated their satisfaction with the training course as high. Attendees appeared to find the contents from the PowerPoints, workbook and handouts were organised and easy follow. Some participants mentioned some slight adaptions to the workbook to make it more durable and useable in the workplace.

In chapter 8 - Phase Four, presents the analysis of a series of interviews with community pharmacists to explore their experiences in using the health literacy interventions, which were generated in Phase Two and taught in Phase Three.

All community pharmacists provided examples of how and when they used the interventions along with the types of patients and consultations, they used the intervention with. Four themes emerged; the appeal of intervention, limitations, adaptions and continued use. Teach-Back seem to have the most impact on the participants. Participants also liked the use of simple language and pictures to help support patients with their medicine taking. Chunk-and-Check and 'It's OK to ask' did not receive as much attention, as the other health literacy interventions. Participants lacked some confidence in delivering Teach-Back, and needed to practice before feeling assured they could deliver effectively to their patients.

This is the first known study to explore community pharmacists', from the UK, apparent awareness and understanding about health literacy, along with the usability of health literacy interventions in community pharmacy practice. The findings confirmed that community pharmacists see many patients, every day, with medication-literacy related confusion. This confusion, was in the main, in relation to patients struggling with medicines and their instructions, struggling with healthcare professionals, struggling with NHS systems and struggling with the media and advertising. Participants accounts demonstrated that community pharmacists tended to identify these patients two ways; patient driven (patients giving the clue to confusion) or pharmacist driven, in which the pharmacist relied on intuition. Participant accounts also revealed that community pharmacists appeared not to identify all the key populations of patients that may be at risk of limited health literacy, with some stereotyping patients in relation to their education levels. This emphasised the importance of whether community pharmacists may have a lack of health literacy awareness and understanding.

The findings also revealed that once introduced to the concept of health literacy community pharmacists are willing to learn more and use health literacy

intervention in their day-to-day practice. Although some community pharmacists may have initial confidence issues in using some health literacy interventions, all found them useful in many different types of patient consultations.

To my knowledge, this is the first study to gather information on health literacy interventions to use in UK community pharmacies using the NGT method.

9.2 Discussion of Findings in Relation to Objectives

The study objectives fell into the four phases of the study, each will now be discussed in turn.

9.2.1 Objective-1. Explore community pharmacists' community pharmacists' apparent current awareness and understanding of health literacy.

Phase One of the present study was related to the apparent awareness and understanding of health literacy of community pharmacists in the UK. In order to seek this information, it was first necessary to explore whether community pharmacists observed patients being confused with medicines, what type of confused patients' pharmacists saw and how they recognised confusion in these patients.

There were suggestions from participants accounts that community pharmacists are often asked to address multiple patient needs in relation to medication-literacy issues. All participants provided examples of patients they saw on a day-to-day basis with medication-literacy issues, which caused the patient confusion in their overall taking of medicines. This suggests that community pharmacists

are a good resource for medication information and that pharmacists educate patients about medicines and health[234].

Participants appeared to understand the complexities of medicine taking and confusion through the lenses of their patients, due to their familiarity with the complex differences in health knowledge, medicine knowledge, worldviews, and understandings of health among their patients. There also appeared to be considerable agreement between participants that pharmacists emphasise and have a commitment to help with medication-literacy related confusion that patients face and thereby, provide additional support in the form of spending considerable time discussing medication-literacy related issues with patient.

Participants reported that they saw numerous issues associated to medication related confusion from patients. For example, participants highlighted that some patients seem to have a lack of understanding as to why they were taking their medicines, others mentioned concerns where basic numeracy skills were required to take medication, and that this caused patients to struggle to take medicines correctly. In addition, participants appeared to have concerns about the consequence of generic prescribing and the confusion seen in many patients, as they had their medicines switched for generic alternatives or different brand of generics being dispensed.

While the participants did not explicitly mention how they followed-up on patient medication-literacy issues and confusion, accounts demonstrated their care and empathy in getting to the bottom of patients' problems. Furthermore, this suggests that pharmacists are good intermediaries to supplement prescriber-patient discussions, particularly for expanding upon information not provided by the prescriber. Whilst, pharmacists expressed frustration about not having

enough information about a prescribed medication and about a patient's clinical situation to effectively counsel patients, they did not report whether they contacted the prescriber when they identified a problem that could have benefited from a conversation with the prescriber. Improved collaboration between these two healthcare professionals might result in better patient care.

Within this theme of confusion seen in patients visiting the pharmacy, participants also reported that healthcare professionals added to the confusion of patients by assuming patients were knowledgeable about drugs and their doses, along with using too much medical jargon. In addition, patients struggling with the healthcare system was also reported by participants, suggesting that participants were fully aware that healthcare professionals and navigating the healthcare system carries with it a high literacy burden for patients.

Addressing one of the main objectives for this study, participants were asked if they had heard of the term health literacy. This is first known study to explore this in UK community pharmacists. Through the questions leading up to the specific question on health literacy knowledge, it can be revealed that community pharmacists' have a lack of awareness and understanding of health literacy. Accounts from participants suggested that patients may, in some way, bring their medicine-related confusion to the attention of the community pharmacist. For example, their failure to order repeat prescription items, their symptoms becoming worse, taking medicines differently to what was advised or just asking the pharmacist for help or clarification. This suggests firstly, that patients have significant trust in community pharmacists, and thus sought their help for any medicine confusion[234]. Secondly community pharmacists have created an environment that encourages patients to ask questions[114], or discuss their medicine issues. However, community pharmacists need to be aware that health

literacy levels appear to be an important determinant of patients' participation in communication regarding their own health. Thus, community pharmacists should not solely rely on patients bringing confusion with medicines to their attention, as patients with limited health literacy often cannot articulate clearly, are less likely to ask questions or seek new information for the problems they encounter[7,18,50,142,235].

Several participants reported that community pharmacists use a 'sixth sense' or intuition to identify confused patients. While participants gave no identifiable reasons for these perceptions, many mentioned it was due to their wealth of experience gained as a pharmacist or their experience in dealing with a particular, regular patient. This 'sixth sense' approach is problematic because community pharmacists may erroneously classify patients with higher levels of education as not being at risk for having low health literacy. What was not in the scope of this study was how intuition affected patient outcomes for example, by averting a medicine error or non-adherence issue, or by leading the pharmacist to take a course of action that resulted in safety, accuracy and appropriateness of patient advice. This could be the focus for future research.

It is unknown from this study whether patients seek out community pharmacists in order to avoid the time delay associated with GP appointments, for their additional expertise or because pharmacists are more readily accessible than GPs. Regardless, patients trust pharmacists to provide information about medicine and health[114,234], and this study suggests that community pharmacists may have ample opportunities to address medication-literacy problems and adherence.

Further clear evidence that implies community pharmacists are unaware of health literacy is the reporting from participants of different population groups which may be associated with poor medication-literacy, leading to confusion with their medicines. The majority of participants believed that medication-literacy confusion to be associated with the elderly which is consistent with other literature[7,20,40,66]. Community pharmacists may have identified this population due to the increased proportion of older patients in this country[236] and the increased use of pharmacy by the older population[237]. However, participants appeared to apply various descriptions in the context of education, intelligence, wealth and dress to describe the low SES population, suggesting that participants appeared to stereotype patients. Participants reported that the lack of intelligence and therefore lack of medication-literacy was based on a patients 'rough' or 'uncouth' speech. Participants also stereotyped patients based on their dress. The corollary of this finding is that participants in this present study appeared to assume that low SES patients would be less medication-literate than their more advantaged counterparts. This could have important implications on the experience of patients visiting the pharmacy and their adherence to medicines, if they are met with community pharmacists showing repeated inequality and discrimination in medicine counselling whereby, causing them to internalise the perceived negative images projected on them by the community pharmacists. For patients, this stereotyping can begin to wear away self-confidence and in turn decision making abilities, leading some patients to avoid visiting the pharmacists for health care and medicine advice.

This study suggests that community pharmacists are not aware that low health literacy is also most prevalent among individuals of ethnic minority, as only two participants mentioned this category of patients. These findings suggest that while participants had some knowledge of the population groups associated with

limited health literacy, they could also benefit from additional health literacy knowledge. This finding raises important questions on whether community pharmacists target members of specific groups when assessing the struggling patients, such as older persons, individuals with less formal education, whilst omitting to help those who speak English as a second language. This is an important point as limited health literacy is widespread and affects all sections of society[7,26,165,238].

Again, the lack of knowledge of health literacy was shown by participants during the interviews. Once shown a health literacy definition, participants were asked to describe in their own word what it meant. Many participants appeared to believe it was the patients' ability to read. This incomplete understanding that health literacy as solely about *reading* information, runs the risk of community pharmacists developing interventions focusing mainly on "readability" of educational materials or medicine labels instead of addressing ways to help activate patients or ways to improve processes to assist patients in self-managing their illnesses. However, many participants appeared to demonstrate fairly strong knowledge as to the consequences associated with low health literacy, and how these consequences related to pharmacy. Ultimately the knowledge of consequences of limited health literacy and how limited health literacy presents itself in the pharmacy environment may be more useful than the knowledge of the actual term itself.

Participants also seemed to understand community pharmacists' professional role in ensuring patients understood their medicines, indicating that they understand their contribution to patient care and to support improved medication taking. However, the vast majority of participants had a limited understanding of the role that the healthcare system and healthcare professionals play in building

patients' health literacy skills, demonstrating the lack of knowledge of health literacy which in turn could restrict patients from developing better health literacy skills.

9.2.2 Objective-2. Determine key health literacy interventions that could be used within community pharmacy (Phase Two)

In the present study, a NGT method was used to identify health literacy interventions that could be used by community pharmacists in their day-to-day practice. The expert panel unanimously voted against using the pre-prepared list of health literacy interventions (see section 6.3.1 in chapter 6). During the idea generation stage of the meeting, the panel generated a list of 36 ideas for health literacy interventions that community pharmacists could use, which matched the pre-pared list that I, the researcher, had already researched (appendix 9). This reflects the panel of experts' understanding of firstly, the number of health literacy interventions available and secondly, which of these would be suitable for community pharmacists to use. What is more, the generation of such abundant data from just one session also shows the ability of this panel to capture such rich and diverse ideas. Generating 36 items also suggests the panels high levels of enthusiasm for the process.

Comments generated during the discussion stage (stage three) of the NGT were in a democratic and non-hierarchical manner and it is clear that all participants had an equal voice in the process, and all responses were valid[203,239]. Furthermore, during the discussion stage, 20 items were discarded due to duplication, highlighting one of the greatest strengths of the NGT, as a democratic way of ensuring that every suggestion is treated equally and is

subjected to group decision thus, avoiding dominance of the results by specific individuals.

During the voting and ranking stage (stage four) of the NGT, each panel member was asked to assign a score to each generated idea. Scores where summed to find the relative importance of each idea and then ranked. This stage reflects on the panels' priorities. The number of times an idea was suggested was no indication of the final ranking of the idea; one of the highest scores was given to an item that was not suggested by all panel members, but then had all panel members voting for it (It's Ok to ask). Likewise, Chunk-and-Check were put forward by only 5 of the 7 panel members, yet the intervention received a relatively high number of votes, ranking it 4th. Teach-Back was put forward by all members of the panel and ranked as one of the highest priorities, ranking it as 2nd. The highest-ranking vote was for 'It's OK to ask'. This was expected as all the experts sit on the local Stoke-on-Trent City Council Health Literacy Steering Group and have been involved in the development and roll out of this local initiative.

In sum, using the NGT method was an effective in producing a list of health literacy interventions to be used in UK community pharmacies.

9.2.3 Objective-3. Develop, deliver and evaluate a pharmacy-specific training programme to address health literacy awareness and introduce health literacy interventions (Phase Three)

Phase Three of the study saw the development and delivery of a pharmacy-specific training session. The overall goal of the training session was to enhance the community pharmacists' awareness and understanding of health literacy in a pharmacy context, and to introduce health literacy interventions generated by the

NGT. The evaluation was in two parts firstly, directly after the training session via an evaluation form and secondly, experience evaluation two months later, during face-to-face interviews in Phase Four.

All attendees rated their satisfaction with the training session as high, which was clearly demonstrated in the evaluation form given immediately after the training session. Attendees appeared to find the contents from the PowerPoints, workbook and handouts organised and easy to follow. Additionally, many stated that the content was *'easily grasped'*. This suggests that attendees were satisfied with the teaching approach used during the session, and that the session met the learning styles of individuals attending the training.

In relation to content, attendees also highly evaluated the balance achieved in participating in activities, such as discussions and exercises. Furthermore, attendees found that the session appeared to meet their needs and expectations. This positive feedback from attendees on the content and delivery possibly indicates that Gagne's[226] Theory provided a successful practical framework for developing a pharmacy-specific health literacy training session. This suggests that the various methods of delivery used in the training session could be successfully introduced into different community pharmacy environments. For example, this present training session was delivered in a large training room, with large numbers of delegates however, the session could be run in a small pharmacy staff room with fewer delegates as part of a staff training session.

 The evaluation form given directly after the training session asked attendees about their confidence in supporting limited health literacy patients. Some of the attendees rated their confidence "neither agree or disagree". This suggests that more opportunities in the training session could address this, to further improve

attendee's confidence in this area. The addition of more role-play examples may overcome this issue. It is concluded therefore, that the actual design of the training session only needs a small amount of refinement before considering wider roll-out to community pharmacy audience.

During the face-to-face interviews, two months later, it was not difficult for participants to recall the training session and their experiences in relation to the session. Attendees reported that before the training event "*I never knew anything about this health literacy*" and after the session *"learnt so much"*. In addition, from the evaluation form, 52.4% 'strongly agreed' and 38.1% 'agreed' that their knowledge of health literacy had been improved. The findings suggest that there was an improvement in the knowledge of health literacy in community pharmacists after the delivery of the training session.

Participants feedback also provided valuable information in relation to the benefits of the materials given at the training session, and the usability of these materials afterwards. Some participants mentioned some slight adaptions to the workbook to make it more useable or durable in the workplace. Many participants commented positively on the pocket guide, which suggested that community pharmacists used it as a reminder system to improve the sustainability and focus of health literacy in their environment.

The training session was not designed to be delivered electronically, as many participants in Phase One asked for face-to-face mode of delivery. Based on attendees' responses and enthusiasm when asked after the training session about changes in the mode of delivery for the training session, participants reported that the learning should be face-to-face. This strongly suggests that community pharmacists like the face-to-face interaction and learning with their

peers[240]. This would again imply that a face-to-face training session would be acceptable for wider roll out.

In summary, the responses to the evaluation form and the interview questions confirm general positive feedback in relation to the design and delivery of the training session, and suggesting, at the same time, certain improvements to one activity and the workbook. Recommendations mainly call for more practical examples in the form of role-plays and slight adaptions of the workbook. Overall there was an improvement in health literacy knowledge after the delivery of the training session.

9.2.4 Objective-4. Explore community pharmacists' perspectives on the usability of health literacy interventions in practice. (Phase Four)

The usability of health literacy interventions by community pharmacists is poorly reported in the literature. The final phase of the study sought to understand whether health literacy interventions, often developed in other countries, could be used by UK community pharmacists. In the qualitative face-to-face interviews, all community pharmacists provided examples of how and when they used the interventions, along with the types of patients and consultations they used the intervention with. Four themes emerged; the appeal of intervention, limitations, adaptions and continued use. Each of these themes were in relation to the different health literacy intervention.

The Teach-Back intervention seemed to have the most significant impact for participants. For example, all participants began the interviews by feeding back their experiences on this particular intervention, with all 11 participants using this intervention several times during the two-month period. This suggests that this

intervention may have had the most impact on community pharmacists during the training session, or that they may have believed it was the most workable.

All Participants reported that Teach-Back was a valuable skill that could reduce poor medicine-literacy issues. For example, participants reported that patients seemed satisfied with their new approach to counselling, and that several times they were able to identify patients that were at substantial risk of misunderstanding medicine instructions, which could have led to overdosing. This suggests that participants believed that Teach-Back benefited patients and has the potential to reduce hospitalisations, due to medicine-literacy issues. Therefore, community pharmacists were able to determine areas, whereby the patient lacks understanding, and will be able to fill in the gaps before the patient leaves the pharmacy.

Some participants reported that the Teach-Back method gave them a structure to work by when counselling patients. This suggests that Teach-Back may benefit community pharmacists through providing them with the appropriate language for teaching medicine use in patients, as well as using the right questions to elicit information from these patients. It also suggests that the sequence or structure of Teach-Back increases the quality of health education practice and benefits both community pharmacists and patients as one participant reported *"I feel so fulfilled as a pharmacist"*.

Participants reported that Teach-Back was found to be advantageous for confirming understanding during longer consultation encounters with patients, as opposed to shorter over-the-counter brief conversations. Participants felt that using Teach-Back during an MUR consultation, invited patients to have a say in how they take and understand their medicines rather than just being told what to

do. This is not surprising, as the MUR provides pharmacists with an opportunity to ensure patients gain confidence in their medicines, and overall control in their disease and health[241]. This finding again implies that Teach-Back enhanced their communication and counselling skills with patients. However, not using Teach-Back for the shorter consultations with patients may imply that the use of Teach-Back is largely influenced by the community pharmacists' comfort with the method[77] or that not using teach-Back reflects that practice settings/systems impacts ability to adopt this particular health literacy intervention.

The impact on consultations, and hence, pharmacist time, is less clear. Some participants reported that it helped them to focus and shorten the MUR consultation, allowing them to concentrate on areas of patient misunderstanding. Whereas, others expressed concern that the MUR consultation took longer than usual when using the Teach-Back intervention, as the participants needed to allocate extra consultation time to encourage the patient to 'teach-back' what they have been told. Further research is needed to understand the time implications on delivering Teach-Back within a pharmacy MUR consultation.

Although the Teach-Back intervention was very popular and the reports from participants were, in the main, positive, some participants expressed there was initial confidence issues in performing the intervention. This lack of confidence may have been due to only one role-play in the training session thus, more role-play examples and practice may have given increased confidence and self-empowerment to minimise this barrier. In addition, if the training session had included pharmacy support staff and not just pharmacists, they too could have helped improve the skills of the pharmacists, by all practicing as a team together.

All participants reported that they would continue to use Teach-Back as a method to check patient understanding, with many mentioning that it would be difficult not to use now they have learnt the benefits from using it. This implies that community pharmacists appear to agree that Teach-Back improves patient safety and communication between themselves and the patient and thus, improves the patients understanding of their medicines

Simple language was another health literacy intervention that community pharmacists used for two-months. The belief that community pharmacists were already using simple language to communicate to patients was one of the main features from interviews with participants about using this intervention. Participants mentioned on several occasions that they *'slipped back'* into medical jargon or that they needed to *'practise a little'* in order not to revert into using difficult words. It was also indicated by some participants, as they mentioned that some words that they usually used may not be considered that complicated. These examples reflect a situation in which a demand for literacy skills placed on patients was not initially recognised by participants, and participants may have overestimated their own effectiveness in conveying information[242]. This also suggests a disconnect from what patients may or may not understand. This is a valid point, as patients with limited health literacy tend to hide their low literacy[7,8,165], feigning understanding and not asking for help, community pharmacists may therefore be under the impression that the patient in front of them are taking in and comprehending what they are told. However, findings from the present study did show that after the training session attempts from participants was to accommodate patients, by using simple language when counselling on medicine use, in particular timing of doses.

Participants appeared to believe that simple language could be used in all conversations with patients and would take no extra time commitments and resources. All participants said they would continue to reflect and practice using simple words in the future when counselling patients.

The third health literacy intervention used by community pharmacists was pictures. In the present study participants mentioned that before the training session, only on rare occasions did they use pictures to explain and assist with medicine instructions to patients. This suggests that firstly, although the use of pictures for patient education is not new, participants seldom used them, perhaps not appreciating the benefit they offer and secondly, community pharmacists may take for granted the literacy of their patients, assuming that they are dealing with a reading patient population.

Once using pictures as a health literacy intervention, participants believed that they were a good idea to reinforce written instructions for example, using pictures for antibiotic doses whereby, drawing a clock face to help the patient understand the timing of the dose. In Phase one interviews participants described how they dealt with many patients confused with timing of doses *"…a patient will often ask "what do you mean, three times a day"…"*. Many participants also used this intervention with complex issues, such as using inhaler devices.

One key finding from this present study is that participants reported that they rarely used pictures as the sole communication source or single-use intervention. This suggests that community pharmacist understand that pictures solely do not convey the level of detail needed for proper comprehension of pharmaceutical information[243].

Many participants reported using pictures for their ethnic minority patients suggesting that community pharmacists consider this population of people to have greater difficulties in obtaining, understanding and acting on health information than the general population[244]. Although some participants mentioned that ethnic minority patients still did not understand a picture which was drawn for them for example, one participant mentioned that their ethnic minority patient *"still did not understand the drawing".* This suggests that comprehension of pictures many be different for patients of different cultural and linguistic backgrounds[245].

Participants reported that using this intervention took no extra time in their consultation with the patient, suggesting that the pictures community pharmacists drew were used to quickly transmit medicine information.

Chunk-and-check was another health literacy intervention that many community pharmacists used however, this intervention was not readily discussed by the majority of participants until prompted. However, when prompted the participants appeared to recognise this as a version or extension to Teach-Back.

Participants accounts appeared that believe that Chunk-and-Check was good for counselling patients on complex or long instructions. This suggests that community pharmacists like to give patients the opportunity to talk, ask questions and clarify information throughout the consultation rather than waiting until the end. Participants also reported that the population of patients they used Chunk-and-Check with the most was the elderly, suggesting that community pharmacists seem aware that the elderly population struggle to remember long lists of information[134,166] and thus, may need extra support in remembering information and so the community pharmacists needs to explain one medicine or health

information at a time, and then check the patients understanding, before moving on.

Participants did not mention any challenges they faced with using this intervention. Yet many linked this intervention strongly to Teach-Back, so one could assume the same challenges would arise. For example, community pharmacists reported the lack of confidence in using Teach-Back and the need for them to practise before using with a patient. This suggests that either the community pharmacist interviewed did not extensively use the Chunk-and-Check intervention, or they used it once they had mastered Teach-Back.

Although participants did not foresee any challenges with using this intervention, they did not actually mention that using Chunk-and-Check was useful for shorter, over-the-counter consultations. This may indicate that this intervention does impact on some consultations and the ability of community pharmacists to utilise health literacy interventions with patients buying over-the-counter medicines or those receiving simple, one item, prescriptions.

One health literacy intervention which is a local initiative to encourage question asking is the 'It's OK to ask' campaign, which is a simple approach to facilitating communication between patients and healthcare professionals. It was developed and supported by the Stoke-on-Trent Local Health Authority. The approach ensures patients that it is okay to ask questions of the healthcare professional and encourages them to ask three questions 1) What is my main problem? (2) What do I need to do? (3) Why is it important for me to do this?

Despite the fact participants were given a campaign pack and materials at the training session, participants in the present study appeared not to receive this

local initiative well. For example, only four managed to use the intervention over the two-month period. With some seemingly not realising how the intervention benefited patients. One participant reported leaving the show material in the car since the training session. This suggests firstly, that there was little enthusiasm for the intervention secondly, the training course and pack issued did not have clear instructions on what was expected to be measured and finally, the community pharmacists failed to see the benefit it offered their patients.

The viewpoint of some participants was that they thought limited health literacy patients would not use the card in which they were prompted to ask 3 questions. Participants reported that limited health literacy would firstly, not be able to read the questions and secondly, not they would not be able to *"take in"* the answers or ask for clarification. These views, in one way, are correct. For those patients with limited health literacy caused by lack of reading and writing skills may not benefit from the intervention. Additionally, those whose first language is not English may also struggle. However, there will be many patients that this tool will be beneficial to and this finding implies that participants did not fully understand that the initiative was to create an empowering environment whereby, the patient was encouraged to ask questions. Also, if participants had used the intervention correctly it may have created a shame-free environment for the limited health literacy patient.

In summary, all community pharmacists provided examples of how and when they used the interventions along with the types of patients and consultations, they used the intervention with. Teach-Back seem to have the most impact on the participants. Participants also liked the use of simple language and pictures to help support patients with their medicine taking. Chunk-and-Check and 'It's OK to ask' did not receive as much attention, as the other health literacy

interventions. Participants lacked some confidence in delivering Teach-Back, and needed to practice before feeling assured they could deliver effectively to their patients.

This section has discussed the findings in relation the four objectives, and thus the four phases, of the present study. The next section will now look at the findings in relation the literature.

9.3 Discussion of Findings in Relation to the Literature

The previous section discussed the findings of this study in context of fulfilling the study objectives, and references were made to relevant literature. This section will now discuss the findings in a broader context in relation to the literature.

9.3.1 Community Pharmacists' Awareness and Understanding of Health Literacy

The first aim of this present study was to explore community pharmacists' apparent current awareness and understanding of health literacy.

The interviews from Phase One of the present study support previous studies, in that they demonstrate that patients are confused with when and how to take their medicines[246,247], misinterpret either the dose (i.e., how many pills to take) or timing (i.e., when to take each dose daily) of a medicine[248,249]. Findings also support the literature in relation to patients' poor numeracy skills in healthcare[30,31]. The present study however, found that community pharmacists supported many patients, on a daily basis, who were confused with medicines, their uses, instructions and numerical information. The daily contact by community pharmacists for patients seeking ad hoc health and medicines

information, suggests community pharmacists are in an optimal position to make a positive impact on health outcomes, medication-literacy confusion and health literacy as a whole. It is therefore, imperative that community pharmacists are proficient in the awareness, knowledge and understanding of health literacy, in order to identify patients with limited health literacy, and apply appropriate health literacy interventions to help support such patients. This is the first known study that explored the extent to which community pharmacists in the UK have health literacy awareness and understanding.

Findings in the present study expands on the evidence that the pharmacy profession have limited understanding of health literacy and the role that the healthcare system and pharmacists have to play in building patients' health literacy skills. This limited knowledge of health literacy in the pharmacy profession in other countries has been revealed by further authors, such as Lambert[149], Devraj[140,141] and Mihalopoulos[150], as discussed in chapter 2. In the present study, the majority of participants had misconceptions of how to identify patients that were confused with medicines and therefore, may not realise that these patients may have had limited health literacy. Participants reported that they were guided by their 'sixth sense' or intuition. Although intuition is not a new concept, this present study has expanded on the fact that community pharmacists are among other healthcare professionals that use intuition to deal with patients. Intuition has been discussed in the nursing profession since the 1970s[250] and indeed psychology researchers have focused on intuition, demonstrating that intuition improves individuals' decision-making ability[251]. Further research needs to take place on the use of intuition within the community pharmacy sector, particularly how it is used to avert a medicine error or non-adherence issue, and identify and help limited health literacy patients who are confused with medicines.

The second misconception that participants had in this present study, was the population of patients that may struggle and become confused with medicines. While many groups of patients that participants reported would be confused with their medicines can be aligned with other studies[7,9,14,18,20,26,29,33], in addition, this study has identified that community pharmacists appeared to have misconceptions and stereotype patients, based on their 'rough' or 'uncouth' speech, as well as their dress. Community pharmacists should not rely on an individual's appearance when assessing health literacy[252], but should consider that some patients from all groups may need assistance with health and medicine information. Community pharmacists need to be aware that limited health literacy is not linked to being less intellectual, it is in fact, down to some missing skills that can be acquired with adequate information, and patients often have the ability to develop these skills but have not had the opportunity to do so[7,8,65,142,146].

The findings from this present study clearly show that community pharmacists in the UK have a lack of awareness and understanding of health literacy, which indicates considerable training is required in this sector of the pharmacy profession. This can be again aligned with other studies discussed in the review section (chapter 2), where eight studies showed that all the pharmacy profession had relatively poor knowledge of health literacy. For example, Bradley-Baker[135], used the AHRQ health literacy tool to survey a limited sample of US pharmacists to gathered information about the level of knowledge that pharmacists have of health literacy. The study determined that pharmacists need more information on health literacy[135], however, this study was limited, due to the sample not explaining how many pharmacists where from the community setting. Only one study was conducted in the UK in relation to health literacy knowledge however,

the main focus of this study was mental health literacy knowledge, rather than the overall health literacy concept.

A larger study by Devraj[140] sought to determine the knowledge of pharmacists using a sample of all practising pharmacists in the US (n=701) in relation to health literacy, and found that less than a third of respondents answered the questions about health literacy knowledge correctly. However, the knowledge questions did not have a 'don't know' option, and therefore, respondents could have guessed the answer and answered correctly by chance. Again, similar to Bradley-Baker's[135] study the author did not give an indication as to how many practising community pharmacists were in the sample. Lambert's[149] qualitative study concluded that health professionals were unfamiliar with the term health literacy. However, only 29 healthcare professionals, four of which were pharmacists, took part in the study. Again, the study did not state the setting in which these pharmacists worked.

In summary, the present study is the first known study to reveal that community pharmacists in the UK have inadequate awareness and understanding of health literacy.

9.3.2 Use of NGT to Generate Health Literacy Interventions for Community Pharmacists

To my knowledge, this is the first study to gather information on health literacy interventions to use in UK community pharmacies using the NGT method. Only recently the NGT method has been used to develop priority lists of activities in pharmacy (see chapter 4, section 4.4.1). Nevertheless, the findings from this

present study shows that it seems to be an efficient technique to gather specific ideas about different interventions that could be used in community pharmacy.

The panel was selected from amongst the local Stoke-on-Trent City Council Health Literacy Steering Group, and therefore were experts in the field, and so can be aligned to other studies. For example, both Hutchings[221] et al. and Bradley et al[217]. used pharmacy professionals for their NGT (discussed in chapter 4). Although neither described the criteria used for selection of these experts. Furthermore, experts in the present study represented a broad range of health literacy expertise and brought experience of patient facing settings, such as dental. In addition, the panel also had representation from a lay patient, which allowed reflection on how they would like to be counselled when visiting the community pharmacy. Having health literacy experts on the NGT panel allowed the session to run to time (two hours), as they did not need to be provided with background literature prior to the face-to-face meeting of the NGT, thus keeping costs reasonable.

Reflecting on the output of the NGT ie. the generated list of health literacy interventions to use in community pharmacy, it was comparable to that found in previous studies. A tool kit provided by the AHRQ[151] that included tools that could be used in outpatient pharmacies of large, urban, public hospitals and clinics within the US. Although the toolkit contents where not developed using the NGT, nor was it developed for community pharmacy, it did however, use health literacy experts and scholars to develop and review the toolkit. The tool kit could also be adapted for other pharmacy environments by adding, omitting, and adapting the template as appropriate. The list generated by the NGT in the present study can also be compared with studies that have used health literacy

interventions with other healthcare professionals whereby, the studies have described several similar interventions[18,134,136-138,142,143,147,148,151].

In summary, to my knowledge, this is the first study to gather information on health literacy interventions to use in UK community pharmacies using the NGT method.

9.3.3 Design of Pharmacy-Specific Health Literacy Training Sessions

This present study revealed that community pharmacists were willing to learn more about health literacy. It is not surprising that pharmacists expressed a desire to learn, as Wilson et al[253] found that there had been an increase in pharmacists' continuing development needs in the UK, with pharmacists engaging in informal continuing professional development (CPD) for example, reading journals, attending local professional meetings and talking to colleagues. In addition, during the past decade there has been a rapid increase in the number of pharmacists undertaking formal, post graduate qualifications such as diplomas[254].

The findings from this phase of the study can be used to inform future health literacy training for community pharmacists. A variety of approaches have been used to teach the concept of health literacy to healthcare professionals[108,110,142,150] however, to my knowledge no educational efforts specifically targeting community pharmacists in health literacy have been reported from the UK. Furthermore, no training sessions have been developed to teach community pharmacists about health literacy interventions that can be used in their day-to-day practice. The pharmacy-specific training session is therefore, likely be the

first initiative in the country to take a step forward in building health literacy skills of community pharmacists and introducing health literacy interventions, in order to lessen the burden of patients when gaining access to the health information and taking medicines they need.

The training programme, delivery, contents and supporting materials, on the whole, received positive feedback for attendees and thus, all pharmacists and pharmacy teams who interact with patients could benefit from being trained in the concept of health literacy and how to use health literacy interventions. It is hoped that the instructional design and theory used to design this training programme will aid other healthcare professionals in developing health literacy training for their teams. What is more, this present training programme used a combination of didactic and experiential teaching techniques, which is likely to meet the competencies needed for pharmacists and their support staff to be health literacy aware. Indeed, Coleman[110] has recently used a consensus study where participants rated their level of agreement as to whether a competency or practice was both appropriate and important for all health professions. This study began to establish a set of health literacy educational competencies and target attitudes, knowledge, and skills that ought to be taught to health professionals when learning about health literacy. After 4 rounds of ratings and modifications, consensus agreement was reached on 62 out of 64 potential educational competencies (24 knowledge items, 27 skill items, and 11 attitude items), and 32 out of 33 potential practices, such as Teach-Back, written information and avoiding medical jargon. Although additional work is needed to prioritise these competencies and practices, as in their current state the lists identified are too long and un-prioritised to be of optimal value. However, their findings could inform future teaching curricula used for differing needs across different healthcare professions. The design of the training session in this present study

can be compared to that of the competencies and practices devised by Coleman, and shows that many of the components were adopted such as, ensuring the attendees understood health literacy, Teach-Back, plain language and to minimise medical jargon.

9.3.4 Usability of Health Literacy Interventions

Findings from the present study suggest that community pharmacists used the majority of health literacy interventions, generated by the NGT, successfully. The interventions were used with different types of patients, such as young, elderly and ethnic minority, and in different types of consultations, such as in-depth, longer MURs and brief, shorter over-the-counter consultations. The findings from the study suggest, that none of the interventions needed any adaption to be used in UK community pharmacies.

Overall, participants in this study showed a positive attitude towards the Teach-Back method, which contradicts findings from both Bradley-Baker[135] and Schwartzberg's[154] studies, which reported that Teach-Back was not used very often by pharmacists. Although both these studies did not specifically use community pharmacists as a sample, but used all practising pharmacists, thereby, it can be assumed that community pharmacists did account for some of the participants. An explanation for the difference in findings between the present study and the two aforementioned studies, may be that both these studies did not report whether their sample of pharmacists had had health literacy training, or had instructions on how to use the Teach-Back method. In the present study community pharmacists had been fully educated on Teach-Back use and benefits through both didactic and experiential training, before the data was gathered.

Thus, it could be argued that community pharmacists need to be trained first, as this study suggests they now have improved awareness and mastery of its efficient method of communication.

In agreement with what has been postulated in the literature, many participants in the present study reported that by using Teach-Back it had possibly reduced medicine related confusion. A systematic review by Ha Dinh et al[86] showed that when healthcare professionals employed Teach-Back improvement was seen in self- care, hospital readmission and hospitalisation. However, what is unique in the present study is that it offers potential insight to the type of consultations and patients that Teach-Back is most suited to, as participants suggested using the method for longer, rather than shorter, consultations, and was helpful for all ages of patients, including the very young. There are similarities between the present study and Ha Dinh's review[86] in that it was concluded that Teach-Back is useful for disadvantaged people and older adults. The present study can expand on this finding by suggesting that Teach-Back would benefit all types of patients irrespective of age.

One potential issue that participants reported was the lack of initial confidence in using the Teach-Back method, and that they needed to practice the technique before using with patients. During the training session attendees were asked to role play with another attendee using the provided scenario in order to create an opportunity to experience the teach-back method and overcome any difficulties they may encounter. This finding, in relation to lack of confidence, may have been explained by the use of only one role play during the training session.

The present study provides evidence that community pharmacists believed they used simple language in patient consultations, nevertheless after the training

session they stated that the simple language used, was not so simple after all. In the present study, community pharmacists reported that they frequently switched from every-day simple language back to medical jargon during patient consultations. Findings in both Devraj[139] and Schwartzberg's[154] studies also reported that a high percentage of pharmacists stated that they used simple language. Both Devraj[139] and Schwartzberg's[154] studies were quantitative in nature and therefore did not give the respondents opportunity to report whether they also switched language during consultations. The findings in the present study is consistent with findings from another study which explored healthcare professionals contact with patients in a hospital setting[255]. The study found that physicians reported that they switched to everyday simple language when communicating with their patients, however, patients did not perceive this. In this present study, it may be the case that community pharmacists found it difficult to clearly differentiate between the two vocabularies; everyday language and medical language[255].

It was not surprising that participants appeared to agree that using plain, everyday simple language took no extra time in a consultation, and so should be used in both longer consultations, such as MURs and shorter, over-the-counter brief conversations. Participants also agreed that using simple, non-medical jargon language was an intervention that all community pharmacists should adopt to help patients, regardless of literacy level, understand their health and medicines better. This is echoed by US strategy document; National Action Plan to Improve Health Literacy and Healthy People 2020[76], which recommends health professionals to competently provide clear and understandable health information to patients in order for individuals to follow healthcare advice adequately[76]. Health literacy intervention using pictures was reported by participants as good for comprehension of complicated pharmaceutical instructions however, in line

with previous studies, participants reported that they rarely used pictures (prior to the health literacy training) to help patients understand medicine instructions. Coughlan[138] suggested that healthcare professionals needed 'buy-in' to understand and use health literacy interventions. Therefore, one suggestion would be that pharmaceutical pictograms that have been tested for comprehension in patients, should be made freely available for community pharmacists to use. One idea would be for pictograms to be printed directly on to medicine labels, as studies have shown a significantly positive influence on both understanding of instructions and on adherence with this type of intervention[105,256].

There was a lack of interest for the local initiative; It's Ok to ask. This could be due to firstly, minimal advertising locally by the creators. Secondly, this intervention was taught towards the end of the evening training session, when attendees may have been too tired to absorb the information. Finally, the difficulty of implementing a new health literacy intervention within a two-month period may not be long enough to spread these changes throughout the practice. Community pharmacists should be aware that this local initiative is very similar to that of the Ask-Me-3 Program (discussed in chapter 1) and although 'It's Ok to ask' as yet to be fully evaluated, studies from the Ask-Me-3 reported some promising outcomes in increasing the number of the elderly who brought a list of current medications to the pharmacist[92].

In summary, this section has discussed the use of health literacy interventions by community pharmacists. Teach-Back seem to have the most impact on the participants, the method worked on many different patients and in the longer consultations. Participants also liked the use of simple language and pictures to

help support patients with their medicine taking. Chunk-and-Check and 'It's OK to ask' did not receive as much attention, as the other health literacy interventions.

9.4 Implications and How Community Pharmacy Can Make a Difference

A theme that has run through this thesis is the apparent awareness and understanding of health literacy by community pharmacists in the UK, and the usability of health literacy interventions in their practice. Evidence from published research suggests that the concept of health literacy has gained little traction within community pharmacies in the UK. This is despite the daily involvement of community pharmacists and their support staff with patients and customers, who may have limited understanding of their medicines or the healthcare system, and have limited ability to navigate through these challenges. This is the first known qualitative study to reveal what UK community pharmacies know about health literacy and the usability of health literacy interventions.

A community pharmacist's focus on health literacy as an essential element for all patient care and safety with medicines. There are a number of ways that community pharmacists can make a difference to help improve the healthy literacy of their patients whereby, reducing the health literacy demands on them. I will now focus on implications for pharmacy practice in three main areas; the individual patient' health literacy, the organisational health literacy and pharmacy education.

9.4.1 Individual Patient's Health Literacy

As a starting point, efforts appear to be needed to enable community pharmacists to recognise the possibility that they are interacting with patients in their pharmacy setting who face issues with limited health literacy and thus, poor medication-literacy. It would appear that more efforts are needed to engage the community pharmacists in identifying patients with limited health literacy, the implications of limited health literacy and its impact on medicine taking. Erlen[257] has referred to health illiteracy as a "silent disability" which demands the attention of health practitioners. She said, "Unless health professionals recognise health illiteracy as an issue requiring attention, the lack of communication that results between patients and their practitioners will widen the chasm of health disparities" (p. 150).

Effective communications between the community pharmacist and their patients is fundamental for safe use of medicines and adherence. Failure to communicate effectively is one of the most commonly cited causes of adverse events and complaints about healthcare[7,15,42,43,47]. The way community pharmacists organise, present information such as medicine labels, and communicate with patients can help to reduce health literacy demands and could lead to improved medicine-taking and health outcomes[7]. Concern and attention are needed on how community pharmacists can best communicate with patients with limited health literacy and numeracy skills. For patients to be able to correctly perform different kinds of task for medicine taking, such as numeracy tasks, will often depend on how that information is presented and thus, giving careful attention to the ways in which written and numeric information is presented is critical among this population. Further research into a better understanding of the role of numeracy in health will allow for the development of interventions to accommodate for patients with inadequate numeracy skills.

This present study has identified a range of health literacy interventions that are effective for community pharmacists to use their day-to-day clinical practice, to improve pharmacist-patient communication. It is recommended that community pharmacists are aware of the concept of health literacy and to employ a range of these health literacy interventions in their role with all patients. In addition, there is a strong argument for community pharmacists to assume that all patients they counsel may have difficulty understanding health and medicine information, and thus should create an environment where all patients of all literacy levels can flourish. De Walt et al.[258] call this a Universal Precaution approach. This means taking specific actions to minimise risk for everyone when it is unclear which patients may be affected. This may be better than community pharmacists trying to assess if individual patients have limited health literacy or not.

This study has shown that health literacy interventions such as Teach-Back, simple language, pictures, and Chuck-and-Check have all proven to be effective for the community pharmacists to learn and use, and are effective interventions for engaging all patients in clarifying information and correcting misunderstandings.

9.4.2 Organisational Health Literacy

A health literate organisation makes it easier for the patient to navigate, understand and use health information and services[259] and thus, community pharmacists have a significant role in creating a more health literate environment within their pharmacy. For example, they could consider the physical aspects of the pharmacy environment as these can place health literacy demand on patients, such as signage. In addition, community pharmacists could also ensure

their telephone answering messages, website and social media presence is health literate.

There are 10 Attributes of a Health Literate Organisation developed in the US by the Institute of Medicine (IOM)113 in recognition that health services required guidance in their health literacy efforts (see

Table 27). Community pharmacists could embrace these 10 Attributes to create a pharmacy environment that decreased health literacy and medication-literacy demands on patients, thereby, enabling patients to access and benefit optimally from the range of healthcare and medicine services pharmacies have to offer.

For the community pharmacy context, Stoke-on-Trent City Council are in the process of developing a health literacy self-assessment tool for all health services. This tool, alongside the 10 Attributes of a Health Literate Organisation, could be used by community pharmacists to rate their performance, which can then be used to guide organisational improvements.

In summary, community pharmacists must be able to understand the concept of health literacy, and implement evidence-based interventions to help decrease health literacy demands on patients. Thereby, enhancing the involvement of their patients, and improving health outcomes and the provision of safe use of medicines.

Table 27. Attributes of a Health Literate Organisation

10 ATTRIBUTES OF A HEALTH LITERATE ORGANISATION	
1	Has leadership that makes health literacy integral to the mission, structure and operations of the healthcare organisation.
2	Integrated health literacy into planning, evaluation measures, patient safety and quality improvement.
3	Prepared the workforce to be health literate, and monitors progress.
4	Included populations served by the organisation in the design, implementation and evaluation of health information and services.
5	Meets the needs of populations with a range of health literacy skills while avoiding stigmatisation.
6	Uses health literacy strategies in interpersonal communication, and confirms understanding at all points of contact.
7	Provides easy access to health information and services, and navigation assistance.
8	Designs and distributes print, audio-visual and social media content that is easy to understand and act on.
9	Addresses health literacy in high-risk situations, including care transitions and information about medicines.
10	Communicates clearly about what is covered by health plans and what individuals will have to pay for services

Taken from Health Literate Organisation developed in the US by the Institute of Medicine (IOM)[115]

9.4.3 Pharmacy Education

The findings of this study will be used to inform and refine the pharmacy-specific health literacy education programme. It will also support the inclusion of health literacy into under-graduate and post-graduate pharmacy curriculum and CPD sessions. To adequately prepare future pharmacists, universities and training organisations for pharmacy need to include training on the relationships between health literacy, medication-literacy and safe use of medicines.

Additionally, the findings of this study can help pharmacy employers and pharmacy managers address issues associated with limited health literacy and medication-literacy by delivering the training session to their support staff. Pharmacy support staff are important to patient satisfaction because they see patients when they enter and leave the pharmacy and assist them in filling out prescriptions, selling medicines and health advice. Health literacy training can assist pharmacy support staff in identifying patients that may need additional support because of low health literacy.

An emphasis should be placed on CPD to include health literacy so that a transition can be made by practising pharmacists. At the very least more outreach of the topic via continuing education programs and national meetings to convey, promote and have committed leadership to the attention of health literacy within the pharmacy profession is needed to overcome the knowledge gap among practising pharmacists.

In order for health literacy to be embedded into pharmacists' overall education and working practices, systemic change must take place within the profession. This systemic change should be reflected in the standards set forth by the

pharmacy professional regulating body. Making health literacy training mandatory may be an important strategy for pharmacy regulators to consider.

9.5 Implications for Pharmacy Policy

Health literacy is a complicated concept with no single definition, that should be addressed jointly by the educational system, healthcare system, and public health system. Currently, there are no health literacy standards to guide patient assessment and communication support, in addition, each sector of healthcare professionals have varying health literacy policies, procedures and definitions.

Community pharmacists can contribute to improving patient's health literacy and medication-literacy by using a few simple techniques that improve patient understanding of their health and medicines. They include using simple language, using pictorial information, asking the patient to repeat back information, and developing user friendly, shame free environments. Although these health literacy interventions are effective and easy to use, they are not routinely used in community pharmacy settings. Community pharmacists should incorporate health literacy into all patient counselling and education programmes, and raise awareness of the issues associated limited medication-literacy.

Health literacy should be included in the pharmacy curricula at all levels of education, including pre and post graduate qualifications. National standards for health education should also be established.

9.6 Strengths, Limitations and Future Research

This study had a number of strengths namely; credibility, confirmability, dependability, transferability and reflexivity, which in turn demonstrated trustworthiness and rigour during the research process. Firstly, I personally needed to make judgements about the 'soundness' of the methods chosen, data collected and analysis and the integrity of the final conclusions[260]. In order to achieve this 'soundness', a useful model proposed by Lincoln and Guba[261] as credibility, confirmability, dependability and transferability was followed. I will now discuss how I implemented each of these during the study.

9.6.1 Applications of Credibility, Confirmability, Dependability and Transferability

Credibility in the present study as substantiated in several ways, such as prolonged engagement, triangulation, debriefing and responder validation. Data for Phase One was collected over a long period of time. The interviews for the initial study started in 2015 with continuing interviews, for the main study, ended in July 2017. Therefore, I felt this satisfied the prolonged engagement.

With reference to triangulation, where the purposes are to 'confirm' data and to ensure data is 'complete'[261], the use of different methods were used for different phases of the study and thus, different data collected. For example, semi-structured interviews, Nominal Group Technique (NGT) and participation in valuation of the training session. Constant comparison and memo writing allowed me to continually check that the data gathered through different methods was found to be consistent and thus, credibility of emerging findings.

Another activity to ensure credibility within this present study was to ensure peer debriefing. In the present study, this was achieved by discussing emerging interpretations with the supervisors, both of whom are also pharmacists, which allowed me to be challenged throughout the process.

In addition, credibility was also achieved by member checking. Following the NGT meeting (Phase Two), at the next local Stoke-on-Trent City Council Health Literacy Steering Group meeting I presented the results to ensure the group were happy with the analysis. This allowed for feedback on my interpretations of their responses. They agreed that the transcripts and results (ranking and voting) should remain unchanged. Furthermore, member checking was also achieved when I presented Phase One and Phase Two findings at the Fourth Annual Health Literacy Conference. The audience for this event not only included some of the participants from the NGT session, but also experts in health literacy, research and health. Thus, providing external checks for quality of data and the process. Hence, their feedback to myself was valued.

It has also been suggested[262,263] that credibility of a qualitative research study can be enhanced by the researcher's credibility. I have many years' experience as a community pharmacist, and additionally, in more recent years, working in the field of health literacy see (chapter 1). Thus, I felt I was immersed in the environment and culture being investigated and was familiar with the study setting[262]. Furthermore, my pharmacy qualifications and health literacy knowledge provided a foundation to tackle the research project about health literacy awareness in community pharmacy. However, it must be noted here that my own experience, such as familiarity with community pharmacy and health literacy could have affected my understanding and interpretation of the contexts

of participant experiences[262]. Therefore, it was vital that I adopted a reflexive approach throughout the study, as noted later in this section.

Confirmability is an approach that focuses on ensuring that the findings reflect the experiences of participants, rather than the researcher's own experience or bias[261]. In other words, at all times I needed to remain neutral as a researcher and try to ensure that other researchers would have come to the same conclusion as myself. In the present study, I dealt with this by giving a detailed outline and audit trail of the methodology used in the development of the research. Furthermore, I have given a detailed account of how the final end-point was reached.

Dependability refers to how stable the data are[264]. Interviews by their nature occur in a particular time and place with particular respondents and cannot be exactly replicated. Therefore, for the present study, the first four transcribed interviews were submitted to my supervisors to be checked whether the data collection process was carried out correctly. What is more, various discussions with my supervisors regarding methods, data collection and data analysis were carried out to ensure continuous scrutiny of the processes applied to collection and analysis of data, along with the presentation of the results. Thus, in order for an audit trail process, in which a comprehensive account and rationale of all decisions made are maintained to enhance transparency, I have presented elements of these decisions throughout the thesis, so the reader can follow the process of the research.

Transferability is the degree to which the findings from the study can be used in another setting[261,262]. In the present study, I have tried to describe a detailed account of the research process. This ensures the reader can make an informed

decision on how to integrate health literacy within community pharmacy within other geographical areas or within another sector of pharmacy, such as hospital pharmacy. Furthermore, throughout the study I have ensured the inclusion of different groups of community pharmacists from different practice settings to address transferability. For example, community pharmacists from multiple and independent sectors and from different areas across Stoke-on-Trent and Staffordshire. Another way I have ensured transferability, is by using direct quotes from the participants[262], that way showing how the themes developed from the data.

Klopper and Knoblach[265] also perceives data saturation as one strategy to ensure transferability. This was applied in the present study in both Phase One and Four semi-structured interviews. Thereby, the data was collected until there was a lack of any new emerging information from participants. However, the key test of transferability will be in further work beyond this study to see if the findings can be transferred to other settings, and will depend on the depth of description and clarity of analysis, to enable readers to apply to their context.

9.6.2 Application of Reflexivity

For this section, I will draw on the work of Steinar Kvale[197] for the reason that he addresses some of the key philosophical issues relating to interviewing. For example, the interview conversation and power that can exist within that conversation. As a contrast to Kvale's work, I will also reflect and address the theory of Laura Nader[266], as her insights in the 'studying sideways' process and how this relates to power had much to offer me during my interviews. Within the interview methodology, power can be exhibited in a number of ways, such as controlling and constraining others' views. Findings[192,197,267] have shown that

power can be determined by a number of factors, including gender, socioeconomic status, education and professional background. Furthermore, it has been suggested that power can shift back and forth between the interviewer and interviewee[268].

Kvale[197], describes interviewing as a guided conversation, in which there is a closeness between the research interview with everyday conversation[197]. However, he also raises concerns regarding taking a too simplistic approach to interviewing, stating that the conversation has a purpose that is actually led by one party – the interviewer. As a result, Kvale[269] emphasises that interviewers have a power or dominance position in interviews. For example, in the present study it was I that set up the interview situation (agenda setting), determined the topic, set and asked the questions, decided which answers to follow up and finally terminated the conversation[269]. This concept, of interviewer dominance, is also known as Studying Down, whereby the interviewee may not have the ability or resources to set their own agenda or judge their own implications in participating in the interview process. We will see later that this concept is questioned by other authors, particularly if both parties are from the same, or similar, professions or backgrounds.

The power situation within my study is more complex than the 'studying down' process, as it was intertwined with factors, such as professional backgrounds and authority[192], which may influence the pattern of the interview. For example, I am a community pharmacist, LPC Chief Officer and an academic researcher, and depending on which role the participants see me in may influence how they respond to questions posed. If some community pharmacists see me as their LPC Chief Officer they might feel some hesitancy in explaining their experiences and perceptions to me and even moderate the language used. Furthermore,

community pharmacists may see my movement into the Chief Officer's role and an academic career as gradually detaching me from the day-to-day context that frames the lives of community pharmacy. If this was the case, I would be unable to appreciate their values and social roles. This may result in the depth and nuances in the data being lost[270]. Although it was important for all these points regarding interviewer dominance and professional backgrounds to be borne in mind, while conducting my interviews, it was also important to remember that I still continue to practice as a community pharmacist, albeit occasionally. Therefore, I felt that I would be comfortable with participants and be able to adapt my interactions with them. This would place them at ease, encouraging them to talk to me quite naturally. Thus, working as a community pharmacist in the geographical area has developed a high level of mutual trust, based on shared experiences of being a community pharmacist.

So far, ways in which the interviewer can dominate the interviewee have been discussed. Looking now at power imbalances in more detail, it has been suggested that a degree of power can also be exercised by the interviewees. This concept is known as 'studying up'. Within this scenario the participants may succeed in manipulating the interviewer[271], because the interviewee is the privileged one of the knower,[272] and thus has more power than the interviewer. In the present study, where semi-structured interviews are used, with a degree of open-ended narrative, interviewees may have more control over the course of the interview than in structured interviews. This is particularly the case in terms of deciding what and how much they want to reveal[273]. However, for my study there may be a mutual trust between myself and the participants, due to my role and relationship with the community pharmacists, and so I felt satisfied that they would not withhold information, or talk about something other than what was asked for[197,273]. For example, when concluding an interview (in Phase Four) I

asked the participant why they wanted to take part in this particular study. She replied;

> "well, I wanted, hoped I'd be able to understand how to help my patients better. You know how it is at the moment in pharmacy don't you? We get little time to help patients…..it seems to be getting worse and worse and it makes me very unhappy................you know what I mean, cuz you're experienced in the profession, I know I can talk to you about how I feel and you'll understand …………..."

In further examining the 'studying up' concept with interviewees in the present study, it could be said that the community pharmacists are the gatekeepers of their time, and so could manipulate the duration of the interview. This is a particular challenge, as community pharmacists are very busy[274]. It was observed by me on a number of occasions when the interview had to be terminated temporarily whilst the interviewee returned to their professional duties. The interview resumed again when the community pharmacist returned to the private consultation room. As a practising community pharmacist, I was fully aware this situation may occur. Thereby, I took meticulous notes of what was said before the interview stopped, so the pharmacist could continue where they left off on their return. Again, due to my understanding of the community pharmacists' role, my participants sought not to impose their power in terminating the interview completely.

Having discussed the concept of 'studying up' and 'studying down' and how this relates to dominance in the interview process. If we now look at power in a different perspective, Nader[266] has an opposing view about interviews. She challenged anthropologists to see interview participants, both interviewers and

interviewees, differently. Her challenge was when the interviewer and interviewee have a connection in society, such as the same profession, backgrounds, concerns or interests, then both parties become equal. Thus, the interview participants (both interviewer and interviewee) do not have power over each, but actually work collaboratively to construct knowledge. Nader's work suggests there should be an egalitarian status for both interviewer and interviewee, and thus displaces the methodological concern of power balances[275], 'studying up' and 'studying down' concepts. Nader's work is known as 'studying sideways'[266], and is a possible strategy whereby the researcher and the researched share a professional background to negotiate the construction of interview dialogue and conversation. Similarly, Ritchie also highlighted the interactive relationship between the interviewer and the interviewed, suggesting interviews can be negotiated and agreed between the researcher and interviewee. They called this 'empathic neutrality,'

I believe in some ways this present study resonates with both Nader's and Ritchie's arguments. Both myself and the participants are community pharmacists, and as a result share common vocabulary of the profession. Therefore, due to this shared relationship there could be a negotiation during the interview process resulting in both bringing interests to the table, in order to co-produce knowledge, and as a result of this, displace the methodological concern of power balances. However, whilst I note that research cannot be value free, it was important for me to make my assumptions transparent and thus, constantly take stock of my actions and role in the interview process.

I have already outlined my professional background as a community pharmacist and my working knowledge with health literacy in chapter 1, along with presenting my early observations of community pharmacists appearing not to have an awareness of health literacy, which lead me to undertake this qualitative

research study. This self-awareness and self-discovery will hopefully eliminate any preconceptions about the data due to my background. Hence in this present study, the coding framework gave a deductive structure to the initial analytic stages. In doing this, the key concepts from the literature better enabled me to suspend some of my own preconceived ideas regarding community pharmacists' awareness of health literacy. Thus, I made efforts to code with an open mind and capture the full scope of concepts, constructions and assumptions. I therefore, acknowledged the need to ensure that the findings from the interviews were reported in a way that satisfied the purpose of portraying the community pharmacists' perspectives of their social world, while accepting that these portrayals were necessarily my interpretation.

In summary, the interview is traditionally seen where the role of the interviewer is to ask, and the interviewee to answer. As a result, it can be said that the interviewer is a potential source of bias. Reflection on Kvale's and Nader's[266] work led me to question the power asymmetry within my interviews, particularly in relation to my perceived authority as LPC Chief Officer. It was therefore, my intentions to be clear about what my role was as a research student. Furthermore, my aim was to be clear as to what is directly reported or attributed by community pharmacists and what stemmed from my interpretation of the data. As a result, this transparent process is a way of supporting the reliability of the data. Hence, although I have many years of experience of a practising pharmacist and recently knowledge of health literacy, individuals that took part in my research constructed their own view of the world and the phenomena under study thus, I allowed individuals to be free to express their own views in relation to health literacy without leading questions and judgement from me. In doing so, I hope to have minimised my own re-interpretation of their views.

9.6.3 My Research Journey

For me, as a pharmacist for many years, I was more closely aligned with a quantitative, positivist background. This is because pharmacy is based on the research paradigm, where evidence of an external truth can be found, from data and facts, which is replicated and finally accepted as the foundation of true knowledge. I feel this comes from my time at university, many years ago! During lectures and tutorials, I led me to believe that quantitative research had great advantages over qualitative research, as we were taught an over-riding emphasis on numbers and statistics. At that time, being young, it was not easy for me to disagree, I developed a respect for positivist-based research and a somewhat dismissive attitude towards qualitative research.

However, for this present study, in order to explore, understand and gather rich information from community pharmacists about their awareness and understanding of health literacy, and experiences of using health literacy interventions in their day-to-day practice, I needed to question my approach to research and which paradigm would best answer the question under study. At first this was difficult for me to move away from the emphasis on numbers and statistics. So, I began to ask the question 'could knowledge be viewed from different perspectives and could it be perceived differently depending on one's viewpoint?' Thus, I read and learnt about different methods of inquiry and their strengths and weaknesses. With this, I became to appreciate that truth, knowledge and perspective was starting to be less set-in concrete.

I realised that after reading about interpretivism and constructivism it deepened my understanding of research paradigms, professional practice, reflexivity, epistemology and learning theory. Thus, my new-found knowledge on paradigms offered me the opportunity to improve my research practice, along with

understanding a new way of exploring the experiences of community pharmacists in their daily practice, in relation to health literacy. Because of this, it was felt appropriate to use the constructivism philosophy in this study, as I wanted to gather rich information from community pharmacists to construct an understanding of the awareness of health literacy, and their experiences of using health literacy interventions in their day-to-day practice. With this in mind, the constructivism approach best enabled the exploration of the community pharmacists' perspectives and experiences of health literacy.

9.6.4 Limitations and Future Work

This thesis opens up several areas for future inquiry in the fields of health literacy knowledge in community pharmacists and the use of health literacy interventions. This study also has several limitations that generate questions for future study, these are now discussed.

Although interviews were continued until saturation took place, 19 interviews for Phase One and 11 for Phase Four Face-to-face interviews were conducted. This number is still relatively small and findings may not be generalisable across the whole community pharmacy profession. With 11 participants in the sample for Phase Four, differences may have been affected by small sample size thus, findings should be replicated with a larger cohort, and in multiple settings, controlling for possible demographic confounders. Furthermore, because the study took place in a single geographical area, the findings may not be generalisable to other locations. Further, a quantitative study may be required to survey a larger number of community pharmacists to determine the extent of generalisability.

The participating community pharmacists were motivated and interested in the topic of health literacy. Their feedback reflects this interest in the topic. However, the training was conducted by an instructor with specific experience in health literacy and community pharmacy. Instruction from less experienced trainers may produce different results and thus, further research could compare the training session outcomes when delivered from different personnel.

Whether this training programme improves health outcomes or medication-literacy in pharmacy patients was not tested. Additional research on assessment of outcomes could help to increase enthusiasm for using the training session for community pharmacists.

This training programme was not used for pharmacy students. Thus, it could be built upon and developed to use and be implemented as health literacy training and education into under and post graduate schools of pharmacy, as to contribute to the reorienting of future pharmacists.

The choice of participants for the NGT may have been a limitation in this study due to the fact that only one local Stoke-on-Trent City Council Health literacy Steering Group exists within Staffordshire. Furthermore, all experts were local and so could introduce bias of local practice. No community pharmacist was present as an expert and this is a further limitation of the study as they could have had felt strongly about what interventions would have been suitable to use in the day-to-day practice of a pharmacy.

9.7 Concluding Remarks

I believe that this thesis makes an important and timely contribution to the health literacy field. This study made use of qualitative data on health literacy awareness and knowledge of community pharmacists, and use of health literacy interventions within the community pharmacy setting. Phase One of this study found that community pharmacists see many of the factors that cause confusion in patients. Those identified in this study align with previous studies. For example, medicine instructions, numeracy, generics, healthcare professionals and the media. While medicines-related confusion is acknowledged in the literature, participants accounts in the present study have further highlighted that patients struggling with medicines is a central feature to the community pharmacist's day to day practice.

This is the first know study to explore UK community pharmacists' awareness and understanding of health literacy, and to report that this was inadequate. Community pharmacists use intuition to identify the confused patient, and many participants believed that patients confused with medicines could be determined based on age or socioeconomic status. To compound this problem, participants erroneously believed that patients with higher levels of education are not at risk for having limited health literacy. Participants also neglected to mention other key populations that may struggle with medicines, indicating that they would be unable to identify patients that require greater health literacy demands.

However, once briefed on the concept of health literacy community pharmacists were fully aware of the professional responsibilities towards limited health literacy patients and to help patient with their medicines. This study also demonstrated

that community pharmacists had the desire and willingness to learn more about health literacy.

To my knowledge, this is the first study to gather information on health literacy interventions to use in UK community pharmacies using the NGT method. Findings from this present study shows the NGT to be an efficient technique to gather specific ideas about different interventions that could be used in community pharmacy.

A training session was devised and to my knowledge no educational efforts specifically targeting community pharmacists in health literacy have been reported from the UK. The scores for evaluations, immediately after the training session, suggest attendee's knowledge of health literacy gained was high. This indicates that the training session was on target to deliver the intended aims and objectives. In addition, participants interviewed two months later still showed a positive attitude towards the training session and materials. Some slight adaptions where recommended for the workbook to ensure it was more durable to use in the work-place.

Of the health literacy interventions tried in Phase Four of this study all have a potential to work in UK community pharmacies. This is the first known study demonstrated that health literacy intervention, usually devised in other countries, can be used by community pharmacists in the UK. Interventions used to support patients with limited health literacy were Teach-Back, simple language, pictures, Chunk-and-Check and 'It's OK to ask'. Overall, it was evident that all participants used and liked the interventions that were taught to them in Phase Three of the study, suggesting that the NGT was correct in their choice of interventions.

Overall, Teach-Back appeared to be the most valuable, easily understandable and had the most impact on community pharmacists. The barriers mentioned were confidence in initially embarking on using the intervention. The findings specifically demonstrated the importance Teach-Back can have on helping to prevent medication errors. Time constraints in using any of the interventions was unclear and further research is needed to address this.

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APPENDICES

Appendix 1 - Education Levels

- **Entry Level 1** is equivalent to literacy levels at age 5-7. Adults below Entry Level 1 may not be able to write short messages to family or read a road sign.

- **Entry Level 2** is equivalent to literacy levels at age 7-9. Adults with below Entry Level 2 may not be able to describe a child's symptoms to a doctor or read a label on a medicine bottle.

- **Entry Level 3** is equivalent to literacy levels at age 9-11. Adults with skills below Entry Level 3 may not be able to understand labels on pre-packaged food or understand household bills.

- **Level 1** is equivalent to GCSE grades D-G. Adults with skills below Level 1 may not be able to read bus or train timetables or understand their pay slip.

- **Level 2** is equivalent to GCSE grades A*-C. Adults with skills below Level 2 may not have the skills to spot fake news or bias in the media.

Appendix 2 – Ethic Approval

Ref: ERP1320

15th March 2017

Tania Anne Cork
School of Pharmacy
Keele University

Dear Tania,

Re: Explore community pharmacists' knowledge and perceptions on helping patients who appear to be confused

Thank you for submitting your revised application for review.

I am pleased to inform you that your application has been approved by the Ethics Review Panel. The following documents have been reviewed and approved by the panel as follows:

Document(s)	Version Number	Date
Phase 1 Invitation Letter	2	February 2017
Phase 1 Participant Information Sheet	2	February 2017
Phase 1 Consent Form	2	February 2017
Phase 1 Interview Guide	2	February 2017
Phase 2 Invitation Letter	2	February 2017
Phase 2 Participant Information Sheet	2	February 2017
Phase 2 Consent Form	2	February 2017
Phase 2 NGT Stages and Questions	2	February 2017
Phase 3 Invitation Letter	2	February 2017
Phase 3 Participant Information Sheet	2	February 2017
Phase 3 Consent Form	2	February 2017
Phase 3 Reflective Diary	2	February 2017
Phase 3 Interview Guide	2	February 2017

If the fieldwork goes beyond the date stated in your application, **30th September 2018** or there are any other amendments to your study you must submit an 'application to amend study' form to the ERP administrator at research.governance@keele.ac.uk stating **ERP1** in the subject line of the e-mail. This form is available via http://www.keele.ac.uk/researchsupport/researchethics/

If you have any queries, please do not hesitate to contact me via the ERP administrator on research.governance@keele.ac.uk stating **ERP1** in the subject line of the e-mail.

Yours sincerely

pp C H Bannerman

Dr Andrew Rutherford
Vice Chair – Ethical Review Panel

CC   RI Manager
        Supervisor

Appendix 3 – Phase One Information for Potential Participants.

Dear Colleague

Re: Invitation to participate in a research project to;

Explore community pharmacists' knowledge and perceptions on helping patients who appear to be confused with their medicines

I would like to invite you and any other pharmacists who work at your pharmacy to take part in a research project on exploring community pharmacists' knowledge and perceptions on helping patients who appear to be confused with their medicines. I am doctoral student undertaking this research as part of my DPharm degree from the School of Pharmacy at Keele University.

If you agree to be involved, you would be asked to have a face-to-face conversation with me at a time that is convenient for you. The face-to-face interview could take place at your pharmacy if you wish and will last approximately 45 minutes. I would ask some questions about your views on identifying and providing help to patients who find understanding medicines and information difficult. Please see the Participant Information Sheet and consent form enclosed for further details about the project.

If you would like to take part or have any questions about the research, please email me at t.a.cork@keele.ac.uk .Thank you for taking the time to read this.

Yours sincerely

Tania Cork

Consent Form
Title of Project:

Explore community pharmacists' knowledge and perception on helping patients who appear to be confused with their medicines

PHASE ONE – face to face interview

Name of Principal Investigator: Tania Cork

Please

tick box

1   I confirm that I have read and understand the information sheet for the above study and have had the opportunity to ask questions.   ☐

2   I understand that my participation is voluntary and that I am free to withdraw at any time up to the point that the data collection phase is complete (expected to be September 2018) and you do not have to give a reason.   ☐

3   I agree to take part in this study.   ☐

4   I understand that data collected about me during this study will be anonymised before it is submitted for publication.   ☐

5   I agree to the interview being audio recorded and I agree for anonymised short quotes from it to be used   ☐

_____	_____	_____
Name of participant	Date	Signature
_____	_____	_____
Researcher	Date	Signature

1 copy for participant, 1 copy for researcher

Participant Information Sheet

Study title:
Explore community pharmacists' knowledge and perceptions on helping patients who appear to be confused with their medicines

Invitation

You are being invited to take part in a research study. You do not have to take part but before you decide, it is important for you to understand why the research study is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. My name is Tania Cork, I am a pharmacy doctoral student at Keele University and I am doing this research study as part of my DPharm degree. Ask me (t.a.cork@keele.ac.uk) if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part. Thank you for reading this!

What is the purpose of the study?
This study will explore community pharmacists' knowledge and perceptions on helping patients who appear confused with their medicines

Why have I been chosen?
You are being invited to take part in this research study because you are a registered community pharmacist within the study area of Staffordshire and Stoke-on-Trent

Do I have to take part?
It is up to you to decide whether or not to take part. If you choose to take part, you will first be asked to confirm your consent. You can still withdraw at any time up to the point that the data collection phase is complete (expected to be September 2018) and you do not have to give a reason.

What will happen to me if I take part and what do I have to do?
If you decide to take part, you will be invited to take part in a face-to-face interview. The interview, ideally, will take place in your pharmacy at a time convenient for you. However, if the pharmacy is not convenient the interview can be arranged at another venue. The interview should take approximately 45 minutes to complete and the main topic will be to discuss your practice as a pharmacist in relation to identifying and helping patients who appear confused with medicines and/or information.

Will I be recorded, and how will the recorded media be used?
I would like to digitally record the face-to-face interview. The digital recording of the discussion made during this research project will be used only for analysis. The results will be included in the students' final research report and may subsequently be published as research papers in academic journals and presented at conferences. No other use will be

made of it without your written permission, and no one outside of the project will be allowed access to the original recordings.

What are the possible disadvantages and risks of taking part?
We are not aware of any disadvantages or risks to you in taking part in the study.

What are the possible benefits of taking part?
Pharmacists have a vital and proactive role in helping patients manage and deal with complex medicines information and regimens, and so enhancing patients' adherence to prescribed medicines. There are many opportunities for pharmacists to help patients understand and adhere to their medicines. this study may help to highlight patients' confusion and issues with medicines. furthermore, it may provide an ideal opportunity for pharmacists to take an active role in ensuring patients leave the pharmacy understanding their medicines.

What if there is a problem or something goes wrong?
You can contact me, Tania Cork, if you wish to complain, or have any concerns about any aspect about any way you have been approached or treated during the course of this study. I will consider such reports promptly and take appropriate action immediately. If you feel that your complaint has not been handled to your satisfaction you can contact my supervisor Dr Alison Gifford at a.j.gifford@keele.ac.uk or Dr Simon White at s.j.white@keele.ac.uk Alternatively, you can contact the Head of School Professor Nigel Ratcliffe n.ratcliffe@keele.ac.uk. If you are at all unhappy about any aspect of the way that you have been approached or treated during the course of the study please write to Nicola Leighton, who is Keele University's contact for complaints regarding research at the following address: Research & Enterprise Services, Keele University, ST5 5BG, email address n.leighton@keele.ac.uk, telephone number 01782 733306.

Who will have access to information about me?
All the information that we collect about you during the course of the research will be kept strictly confidential and no one outside the project will be allowed access to it. Electronic data containing personally identifiable information about you will be stored on password-protected media that only I and my supervisors' Dr Alison Gifford and Dr Simon White have access to. Hardcopies of data and other documentation containing personally identifiable information about you will be kept secure in a locked cupboard that only my supervisor and I have access to. At the end of the study all data (expected September 2018) and documents containing personally identifiable information about you will be destroyed. You will not be able to be identified in any reports or publications.

How will information about me be used?
The results (including anonymised short direct quotes) will be included in a research report as part of my DPharm degree at Keele University, and may subsequently be published as research papers in academic journals and presented at conferences. No individual person will be identifiable in any direct quotes, reports, papers, presentations or summaries. The results of the study might also be used for additional or subsequent research.

Who is organising and funding the research?
The study is being organised and funded by the School of Pharmacy at Keele University.

Who has reviewed the study?
The research study has been approved by Keele University Research Ethics and Governance Committee.

Further Information and Contact Details

If you have any questions or require any further information, either now or at any time during the study, please contact me (Tania Cork) at t.a.cork@keele.ac.uk. Alternatively, you can contact me in writing at the School of Pharmacy, Keele University, Staffordshire ST5 5BG.

Thank you for taking time to read this information!

Explore community pharmacists' knowledge and perceptions on helping patients who appear to be confused with their medicines

PHASE ONE – face to face interview

Obtain verbal consent to participate (Check consent form completed)

Establish demographic information where not already known including: gender of participant, approximate length of time since registration, pharmacy type (independent / small chain / large multiple), size (small, medium, large), and location (e.g. shopping parade, health centre, high street) etc

1. **Understanding about and experience in managing patients who are confused with medicines and/or information**

Talk me though experiences you have had of patients who is confused with medicines.
(probe have they always misunderstood or just recently. If recently why? Probe whether they think this could be due to age, worsening of condition, loss of a person/relative who helped before).
Talk me though experiences you have had of a patient who is with confused health information
(probe whether this was the spoken word, such as verbal communication or television, or written word such as leaflets or internet).

How do you think you realised the patient was confused with medicines or information about medicines

(probe Did you identify due to patient driven – they acted in some way that you concluded they were confused? Did the patient just ask for help?

Who do you think are at most risk of not understanding health information or medicines information
(probe what patients to they see that may be at risk. What different types of patients may be at risk. Such as elderly, really ill, education attainment. What is the likelihood of these patients being identified?)

2. **Health literacy and patients with limited health literacy**

Have you ever thought that a patient may have poor understanding of health words to understand health information and medicines information?
(probe what is their awareness around patients not understanding health words such as, chronic. What is their awareness around patients being literate but unable to comprehend or action health instructions, such as three two three times a day. Do you have any experiences of such patients?)

If I used the term HEALTH LITERACY what would it mean to you
(probe If no, say 'HEALTH LITERACY is about the ability to understand, obtain and comprehend health information. Whether spoken or written' If they have heard of it ask what they understand the term to be about)

Patients with limited HEALTH LITERACY means that they may not be able to understand what you are saying about medicines. They may also not understand how to obtain health information. What do you think the impact would be for the patient?
(probe whether they think it could lead to poor health, mortality, morbidly, hospitalisation, poor adherence to medicines)?

What role do you think the community pharmacist has currently in playing a part in ensuring patients are health literate?
(probe ask what they could do in their day to day practice and how they think this could benefit patients.

3. Training session for pharmacists

Do you think that a training session would be useful to help community pharmacist understand the issues of limited health literate patients?

(*probe what would be useful content and style of delivery, and the challenges, time, workload, space, confidence,)*

Reaffirm consent to participate and ask for permission to use quotes.

Thank participant

Obtain verbal/written consent to participate (Check consent form

completed)

Demographics

Establish demographic information where not already known including: gender of participant, approximate length of time since registration, pharmacy type (independent / small chain / large multiple), size (small, medium, large), and location (e.g. shopping parade, health centre, high street) etc

Understanding about and experience of managing patients who have difficulty in understanding and comprehending medicines and instructions
Have you had any experience of managing patients who can not understand or comprehend information given to them about medicines? (Probe about whether they do any sort of screening – mention literacy screening (last), and specifically ask about situations they have come across where patients are unaware of what medicines are on a prescription or are unaware they should be taking a medicines. What are the commonly confused areas with prescriptions or medicines or instructions? Ask about details and process – e.g. who/where started the medicine, who monitored/reviewed it, have they always misunderstood the medicine or just recently (due to age, worsening of condition, loss of a person who helped before), Ask about patients that do not adhere or abide to warnings on the label. Especially ask about their experiences in dealing with patients that miscomprehend or misunderstand their medicines and instructions.

Identification of patients who struggle to understand medicines and instructions
Do you think that there are issues relating to patients age and understanding medicines and instructions? (Probe about whether any/how many of their patients are at risk of not understanding and comprehending medicines and instructions and the likelihood of them being identified.
What other issues do you think are related to lack of understanding and comprehension towards medicines and instructions. (probe about educational levels, ethnic minorities)
Patients encouraged to ask questions
If there was plenty of time and privacy within the pharmacy, given the opportunity, what do you think patients would like to ask community pharmacists. (probe about whether they have time to answer questions by patients, do they encourage patients to ask questions – if so how. If they spend time counselling, literacy screening, do they feel patients understand them and do they feel patients then start to talk more about their problems with understanding and comprehending medicines and instructions)

Using new or different communication techniques to help assist patients
Can you think of a time, in the past or recently, when you used a different communication technique, to help a patient? (probe did you feel it worked? Describe the communication technique. Have they heard of AskMe3 or 'teach back')
What do you think about your awareness / knowledge/understanding of health literacy? (probe have they heard of the term. If so where and when. What

does it mean to them and their role of a pharmacist? Do they understand the implications of limited health literacy in patients?
Facilitators and barriers

What resources would you need to provide better communications to patients that lack understanding and comprehension towards medicines and instructions? (Probe about time requirements and other resources, training, remuneration etc)
What do you see as being the benefits / facilitators of providing new, different communication techniques?
What do you see as being the barriers / drawbacks of providing new, different communication techniques?
What effects do think providing new, different communication techniques might have on your relationships with patients and other health professionals? (Probe for specific details and examples from providing other new, different communication techniques?

Is there anything else
Would you'd like to add on the subject of patients misunderstanding medicines and instructions?

Reaffirm consent to participate and ask for permission to use quotes (also need to complete consent form). Thank participant

Appendix 6– Ritchie's Interview Cycle – adapted for this study

	Stages of interview	Description in relation to this study
Stage 1	Arrival and introductions	Establish a rapport with the pharmacist and ensure I 'host' the interaction by sounding friendly and positive
Stage 2	Introducing the research	Ensure consent is sought by the pharmacist when I introduce the aims, objectives and that the study will be anonymised. Point out the scope of the interview and discuss that the pharmacist is in control of what is disclosed. Emphasise that there are no right or wrong answers and that I want to hear their perspective in their own words.
Stage 3	Beginning the interview	Health literacy contextual background information. Set the tone for the rest of the interview
Stage 4	During the interview	Ensure I use open questions to allow for breadth and depth coverage of the topic
Stage 5	Ending the interview	Give notice that the interview will be ending soon and ensure I end on a positive note
Stage 6	After the interview	Thank the pharmacists for their time and contribution. Reiterate again that the study will be anonymised and how the information they have given will be treated and used. Listen out for last minute comments by the pharmacists – known as 'doorstep data'

Appendix 7 -Extract of reflective account from an interview for Phase One

<u>Medicine confusion</u> was seen in many patients for her. Initially it was about patients having small misunderstanding, such as not sure when to take their tablets but at least they took them at some point in the day. It was about patients not understanding some instructions such as 'when required'. Later she talks about patients' confusion in a more complex manner such as their inability to control their long-term conditions or symptoms due to their confusion with medicines. she talks about how some patients are confused with their medicines right from the outset and so for a healthcare professional to try and break that habit of taking medicines wrong is very difficult. She mentions how this confusion stems for the healthcare professional not giving the information in the correct manner for the patient to understand it when the medicines are initiated. She goes on to mention that the confusion can take time to be detected. She mentions about the younger generation and how the healthcare professionals assume their knowledge about health and medicines and yet she worries a lot about this population and their lack of knowledge. She mentions about wanting to work closely with the younger generation in order to understand their knowledge and knowledge gaps around health and medicines in general. That way she sees she could help them better. She also mentions that it scares her that something terrible may happen one day because she, along with other health care professionals assume that the younger generation has 'basic knowledge' of health.

<u>Recognising patients that are confused</u> was an important aspect of the pharmacist's role for her. She stated that she could not explain how she could recognise them but she just did. For her it was down to the years and years of experience in dealing, face to face with patients in the pharmacy. She mentioned

that it was something that the patient did or said that would her reflect on the case. She would just know 'something was not right'. She stated that it was almost like a 'sixth sense' that came with experience. For her there was not an option to distance herself from patients, the pharmacist role was about becoming part of that patient's life and watching them through their life course and helping them through the different stages. She mentions about some patients she has known since they had their first child and now they are grandparents and elderly, and so she has advised them as a young mother and now as an aging person on many medicines. For her the whole health system could play a more helpful part in supporting patients who may be confused. She mentions how prescribers could inform the pharmacist about drug or dose changes so they did not miss changes, IT systems could also be used for this. What she says a bit later supports the fact that all patients need to be checked in case they are confused. She mentions that it's not just the young and elderly but many other patients like those with language barriers, low educated patients. She mentions how worried she is now, when she really thinks in depth about it, just how many patients out there many not understand how to take their medicines correctly.

Health literacy was not a term she had heard of but thought it could relate to how the patient understood what healthcare professionals were talking about. She mentioned it was about using basic words instead of using medical terminology that patients may not understand. She mentions that if complicated words are used it can be an obstacle in helping the patient to get treated. The way she describes it is using the word 'decongestant' for a cold remedy and the fact it just comes naturally to the pharmacist to use that word when discussing the symptoms of a cold to a patient. She also mentions how she tells a patient to take a medicine three times a day and yet many patients can not work this out and do not understand out to divide up the 24hour clock to take the doses

evenly. She talks about how we should possibly treat the patients in a child-like manner and show them 'slowly, step by step' how to manage their medicines, just as we do with small children as we teach them things.

Appendix 8 example of transcript with list of themes and quotes

Example of the list of themes with quotes for one interview

Read through one interview and wrote themes down left hand side

theme	quote	Pg & line no.
Confusion of when medicines need to be taken	oh gosh yes okay, obviously there are a lot of patients that are very confused with medicines ……… as simple as not understanding when they're supposed to take it	1:1-3
Replacement or additional medicines causes confusion	I have had many occasions where patients get new medicines and then not sure whether they should still be taking the old medicines. So, they're not sure if it's in addition or a replacement. Not long ago I had a prescription for a gentleman who told me he was very dizzy since starting his new tablets a couple of months ago. When we discussed it together I realise he should have stopped one of his blood pressure tablets because the GP had prescribed a new one. Makes me wonder how many patients just take both medicines not realising they need to stop one of them – very worrying really	1:22-28
Identified by the pharmacist	we encourage the counter assistants, technicians and pharmacists to speak to the patients and asked them if everything is okay, is everything fine, this helps us to see which patients are confused and need extra help.	2:29-31
confusion from brands and generic medicines	We have many patients that complain and get confused with the different colours of medicines because they change every month. The patients hate generic changes because they just get use to a medicine being one shape, size and colour and then we change the generic to another. This really confuses the patient. We can not do a lot about this and especially when the prescriber changes it to a branded generic we have to use the drug by a different name also – this really does confuse the patient	2:33-38
Lack of understanding what medicines are for	inhalers always causes a misunderstanding or confusion with patients, because yeah, we get people even if we been through it several times about long acting and short-acting inhalers for example, and they still don't get it. Still don't understand even if they are well controlled, they still need to use the preventer. Patients just don't understand which medicine or inhale is for what.	2:44-48
Prescription reordering system causes patient confusion	patients reordering their prescriptions is so complicated now. I feel sorry for them, why can not the NHS just have one procedure that we all know, both us pharmacists and the patients, on how to order repeat items for prescriptions. Most patients that come into this pharmacy that have ran out of their tablets is because they do not understand the ordering process and so have not got their prescription on time before they have completely run out.	3:60-64
Conflicting messages	we get quite a few diabetic patients who are confused about the information given to them that appears to be conflicting information from their diabetic nurse and other healthcare professionals regarding what they should or should not be eating et cetera. So for years now we have been an help and we will go through with them the displays which helps trigger conversations about diabetes and we can talk about foods and fluids et cetera. But the patient will say that my diabetic nurses told me not to have jacket potatoes for instance and you think where as that come from! You know things like that very conflicting and the patient is very adamant that, that is what they've been told, that they can't eat jacket potatoes. Or can't have tinned vegetables,	3:65-73
Patient asks questions if they don't understand	so how do we often pick it up….er… well the patient will just ask us a question or tell us they do not understand something. Usually they will bring in a leaflet and ask us to explain the information contained within it.	4:86-88

Pharmacist takes time to explore patients understanding	MURs is a great way of picking up confusion in patients. This is because we get time to sped with them on a one to one basis and go over everything about their medicines. MURs allows us time to re-educate the patient on their medicines and gives the patient time to ask us questions.	4:93-96
Use of IT to help clarify confusion	And of course now we have summary care records which allows us to find out more exact information about the patient. So when we deal with confused patient we can now help them by using this to clarify any issues	4:96-99
Using verbal and written information to help patients understand	I always try to make sure that I verbally back up the written information I give. So I would give a leaflet out for, say, health eating but I would talk about the topic of healthy eating also just to make the patient fully understands.	4:102-104
Pharmacist experience can identify patient confusion	I suppose, as I said, it's instinct, experience really. I would just know if the patient is not understanding me. They would say something tiny, little….something that would make you think, it is unusual for this patient. I suppose it could be described as a sixth sense really.	4:105-107
Elderly with polypharmacy

language difficulties, low educated | the most at risk are older patients on multi-medicines. I suppose the older patients get the more confused in general they get, then add in medicines, in which they will have many most of the time, then they are just confused. They get confused with which medicines treat which condition and which medicines to take when.

So I think it's not just the elderly and young patients that may get confused, I am now think about with language difficulties, low educated patients….gosh the list could go on and on | 5:116-120

7:170-172 |
| Assume patient's knowledge and understanding | I guess………. and we all do it ……..we assume a certain level of knowledge and understanding. For example I have girls in here getting EHC and I am alarmed how little they know given at the age they are. And yet they have gone full through sex education at school and yet they are sitting here and they do not have a clue about anything about their periods. They I know about sex which is rather worrying but they can't count their period days, they don't know day one day five…… very frightening isn't it. And so we assume they have medical and health knowledge so assume they understand us. We know not everyone has full knowledge of health but we assume people have a basic knowledge and I think that's probably how all practitioners go wrong. Because of our knowledge, we assume a basic understanding from patients and I think that's where a lot of us go wrong even me. And therefore, we should strip it all back and asked how much do these patients actually know. | 5:123-134 |
| Health literacy is understanding their medication and condition | have not sure I heard the term specifically but to me it would mean a basic understanding from the patient of what we were talking about so the patient can understand their medicines and their health. I suppose if we think about it if we use complicated word that the patient does not understand this could be an obstacle in them getting the right care.

But surely as a healthcare professional it is our responsibility to make sure the patients understand their medicines and the information that we are giving them, not just to let them walk away and think they understand. This is really got me thinking now because all too often we do hand medicines over to the patients and hope they understand and yes when some patients do come in that are confused so we do take extra care engage of those patients, but it may be patients that I have not thought about that are confused | 6:149-152

7:175-181 |

Healthcare professionals have responsibility to ensure health literacy in patients		
Using medical jargon causes confusion	we talk over the counter to patients and say expectorant, demulcent, decongestant, antihistamine basic terms which just trip off the tongue and expect the patient to know. For example we would say, like 'you need a decongestant' …. can you imagine some patients don't even know what it means and yet how many times a day do we say it. And what sort of you cough do you have 'chesty dry cough' how many times do we hear that? it is because they don't know they really don't know do they.	6:153-158
Consequences for the NHS of limited health literacy	it could be massive more hospitalisations because are not taking medicines correctly. Problems with taking a medicine so adherence and compliance. And as a whole it will cost the NHS a lot of money – money we have not got.	7:173-175
Health literacy training for community pharmacists	I think it would be absolutely fabulous yes it would help us to see what we're missing. It would really help us to think about the patients that need extra help instead of us assuming who is confused. I thinking any training that helps us keep up to date with helping patients such as counselling skills is valuable for all healthcare professionals not just community pharmacists	7:182-186
Contents for the training session	I am happy with anything really. I take part in anything. I know a lot of people don't like role-plays but if it's on the course, I will do it. I see that there is a need for role plays and it is a good place to practice – you know in a safe environment with peers. I would also like to see some theory behind HEALTH LITERACY which will help understand where the term has originated from and evidence behind its use.	8:187-191
Media mismatch of information	The media causes a lot of problems. Patients always come in asking for advice about something they have read in a magazine or the paper. Statins for example there is a lot of publicity around these medicines which adds to their confusion. Because if you think about it the headline one day will be the risks of taking Statins and the next day it will be the benefit of taking Statins so that doesn't help with confusion	8:199-202

Appendix 9 Pre-researched Health Literacy Interventions

improving verbal communication	improve the encouragement of patients to ask questions	use of pictures to improve understanding	improvement of written leaflets and information
tailored patient-centred verbal communication	invite questions	visual tools	written leaflets and PILs
teach back	ask me 3	simple graphics	pill cards
speak slowly	It's OK to ask	videos or utube	medicines labels
no medical jargon	speak up	show and tell	font size, white space and uncluttered
simple language	encourage 'what question do you have for me?'	video or dvd	SMOG (simple measure of gobbledygook)
open questions	Open questions	draw pictures	FRY
limit message to 3 points		charts for medicines	conversation style writing
reinforcement			flesch-kincaid readability formula
chunk and check			culturally, gender and age appropriate written info
living room language			
repeat information for recall			
repetition			

Appendix 10 NGT Ranking Sheet

Letter representing an idea – see flipchart	Choose the 10 ideas that you consider the most important from the total list on the flipchart. Rank these ideas and give a score of 10 to the most important and a score of 1 to the least important.
A	
B	
C	
D	
E	
F	
G	
H	
I	
J	

Appendix 11 – Evaluation Sheet

<u>Health literacy and the community pharmacy</u>

Please circle your response where **1 = strongly disagree, 2 = disagree, 3 =neither agree of disagree 4=agree, 5 = strongly agree**

A. The objectives of the training were clearly defined?

| **1** | **2** | **3** | **4** | **5** |

B. The training course met my needs and expectations

| **1** | **2** | **3** | **4** | **5** |

C. The content was organised and easy to follow

| **1** | **2** | **3** | **4** | **5** |

D. The materials and handouts were useful

| **1** | **2** | **3** | **4** | **5** |

E. Participation and interaction were encouraged

| **1** | **2** | **3** | **4** | **5** |

F. The trainer was knowledgeable

| **1** | **2** | **3** | **4** | **5** |

G. The time allotted for activities was sufficient

| **1** | **2** | **3** | **4** | **5** |

H. The training room was comfortable

| **1** | **2** | **3** | **4** | **5** |

I. The PowerPoints were readable and organised

| **1** | **2** | **3** | **4** | **5** |

J. The topics covered were relevant

| **1** | **2** | **3** | **4** | **5** |

K. I am now confident to support patients with limited health literacy

| **1** | **2** | **3** | **4** | **5** |

L. The training programme has improved my knowledge of health literacy

| **1** | **2** | **3** | **4** | **5** |

M. In general terms I was satisfied with the training course

| **1** | **2** | **3** | **4** | **5** |

Before you attended this course had you heard of HEALTH LITERACY?

YES / NO

Would you like to make any further comments about the training session?

Explore community pharmacists' knowledge and perception on helping patients who appear to be confused with their medicines

PHASE FOUR – face-to-face interview

Establish demographic information where not already known including: gender of participant, approximate length of time since registration, pharmacy type (independent / small chain / large multiple), size (small, medium, large), and location (e.g. shopping parade, health centre, high street) etc

Obtain verbal consent to participate (Check consent form completed)

1. **Thoughts about the training session**
   What was your thoughts about the training session on HEALTH LITERACY

   (*probe did it address your aims, did you leave understanding HEALTH LITERACY, would you have liked the session delivered in another format (on-line), the content too much, not enough)*

2. **experiences of using the interventions**

   Talk me through which interventions you have used and not used.

   (probe how you used them, when, which patients etc. Over what time frame. What has been learnt. How comfortable you felt when using the interventions. How useful you thought each intervention was. Any limitations you may have found when using the intervention. Your thoughts, if any, of adaptions needed that could improve the intervention. Is there any way to increase their transferability to community pharmacy in the UK)

3. **Willingness to use the interventions in the future**

   Do you think there's a need for more literacy screening in the community pharmacy than is currently provided?
   (probe about whether any/how many of their patients are at risk of limited HEALTH LITERACY, would you consider continuing to use the interventions)

Appendix 13 – Presentation for training session

ACTIVITY THREE –
IDENTIFYING PATIENTS WITH
LOW HEALTH LITERACY

* 10minutes

* flipchart feedback

* **page 14 of workbook**

Feedback

How can you help your patients
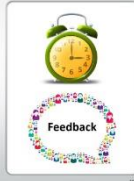
* Remember health literacy is a balance of 3 elements and by looking at all these we can help build health literacy in patients
* Pharmacists can help in a number of ways **page 16 of workbook**

* There are also health literacy interventions you can use to help patients become more health literate.
* Lets look at some now

Teach-Back

* We will now all watch a video that will outline health literacy and discuss a health literacy intervention that can be used by you to support your patients in becoming health literate

* Video Stoke City Health Literacy

* **page 17 of workbook**

ACTIVITY FOUR – PRACTICE
TEACH-BACK

* 10minutes

* Verbal feedback

* **page 19 of workbook**

Feedback

Chunk and Check

* Limit information

* Develop short explanations for common medical cond

* Discuss specific behaviors rather than general concepts

* Review each key point at the end and use teach back skills
page 21 of workbook
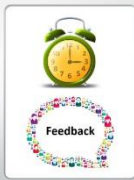
Simple living room language

* Do you always use simple terminology?

page 22 of workbook

Speak clearly
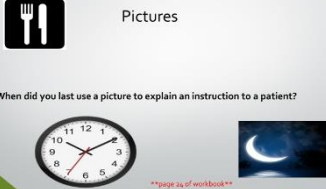
ACTIVITY FIVE – MEDICAL
JARGON

* 3 minutes

* Voluntary feedback

page 23 of workbook

Feedback

Pictures

* When did you last use a picture to explain an instruction to a patient?

page 24 of workbook

It's OK to ask

* Local initiative designed by Stoke on Trent City Council
* Badges
* Postcards
* Poster

page 25 of workbook

It's OK to ask

Summary

To make sure I've explained things clearly so far, can you tell me in your own words...........

* What health literacy is?

* How do you know if a patient has limited or low health literacy?

* Name at least 2 techniques to improve communication with low-literacy patients.

* Provide an example of the teach-back.

References for slides and handbook

* Ratzan SC, Parker RM. 2000. Introduction. In: National Library of Medicine Current Bibliographies in Medicine: Health Literacy. NLM Pub. No. CBM 2000-1. Selden CR, Zorn M, Ratzan SC, Parker RM, Editors. Bethesda, MD: National Institutes of Health, U.S. Department of Health and Human Services
* Weinman Jet al. How easy is too patient anote most knowledge: a cross-sectional, quest ornane study of a patient group and a general public sample BMC Family Practice 2009, 10:43
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* Rowlands G et al. Health literacy: report from an RCGP-led health literacy workshop. Royal College of General Practitioners, 2014. 2014:1-36
* Dr Susann McCarthy and Dr Laura Sahm, University of Cork. https://www.hse.ie/eng/services/publications/clinical/saner-better-health-library.pdf
* Joanne Protheroe, Don Nutbeam and Gill Rowlands Br J Gen Pract 2009; 59 (567): 722-723
* Te amich-umor. Patient-reporter patreisore of prescription drug label instructions Wolf, Michael G et al. Patient Education and Counseling. Volume 67, Issue 3, 293 - 300
* The cost of limited health literacy– Eichler, Wieser and Brügger, 2009
* DeWalt D A, Callahan L P, Hawk H H, Broucksou K A, Hink A, Rudd R, Brach C, Health Literacy Universal Precautions Toolkit. AHRQ Publication No. 10-0046-EF. Rockville, MD: Agency for Healthcare Research and Quality. April 2010
* Kripalani, Jacobson (2007). U AHRQ Health Literacy Universal Precautions Toolkit

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Thank you

QUESTIONS

community pharmacist
Workbook

Name………………………

LEARNING OUTCOME

At the end of this training session, you will be able to have an awareness of health literacy and interventions to help limited health literacy patients.

OBJECTIVES

1) **Define and describe what health literacy is**

2) **Identify implications and consequences of limited health literacy and poor medication-literacy**

3) **Identify patients with limited health literacy**

4) **Recognise the role that community pharmacists can play in helps patients with limited health literacy**

5) **Use health literacy interventions to support patients' health literacy**

OBJECTIVE ONE - DEFINE AND DESCRIBE WHAT HEALTH LITERACY IS.

Health literacy is;

> Health literacy is the degree to which individuals have the capacity to _obtain, process,_ and _understand_ basic health information and services needed to make appropriate health decisions[1].

Pharmacy health literacy definition is;

> An _individual's ability_ to obtain, comprehend, communicate, calculate and process, basic information about medication that is necessary to make informed medication decisions in order to safely and effectively use their medication, regardless of the mode by which the content is delivered (e.g. _written, oral and visual)_[2].

Health literacy is not;

1. Plain Language. Plain language is a _technique_ for communicating clearly. It is one **tool** for improving health literacy.

2. About reading.

➢ Remember the patient has to……………

► Obtain

► Process

► Understand

What goes wrong?

Balance between the patients, healthcare professionals and the healthcare system. These three elements need to work together to improve health literacy.

Why is health literacy important?

Only about 1 in 4 people can correctly identify the location of the lungs and kidneys[3]
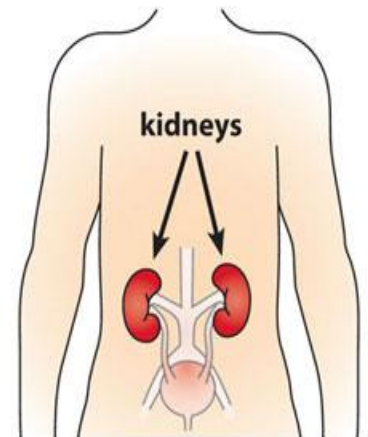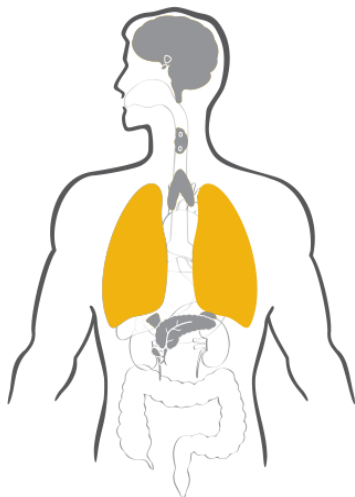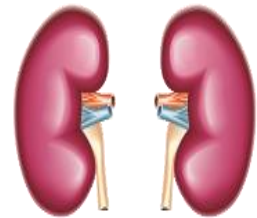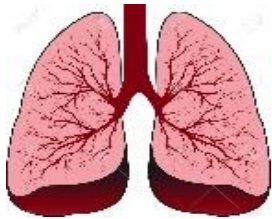
This graph below shows some results from a study[4] that demonstrates patients' comprehension and demonstration of medicine taking compared to reading the instructions. Along the bottom (x-axis) you have the patient literacy level. Patients were categorized as having low, marginal, or adequate literacy. The yellow bars show the percentage of patients in each literacy level who can read the instructions on the pill bottle correctly. The green bar shows the percentage of patients who actually took the right number of pills out of the bottle when showing how they would take the medicine.

It is troubling to see how many patients would be taking this prescription incorrectly. Most of us assume that, when we write a label, the patient will be able to take the medicine correctly.

Rates of Correct Understanding vs. Demonstration
"Take Two Tablets by Mouth Twice Daily"[4]

Key points from your learning

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Key points from your learning
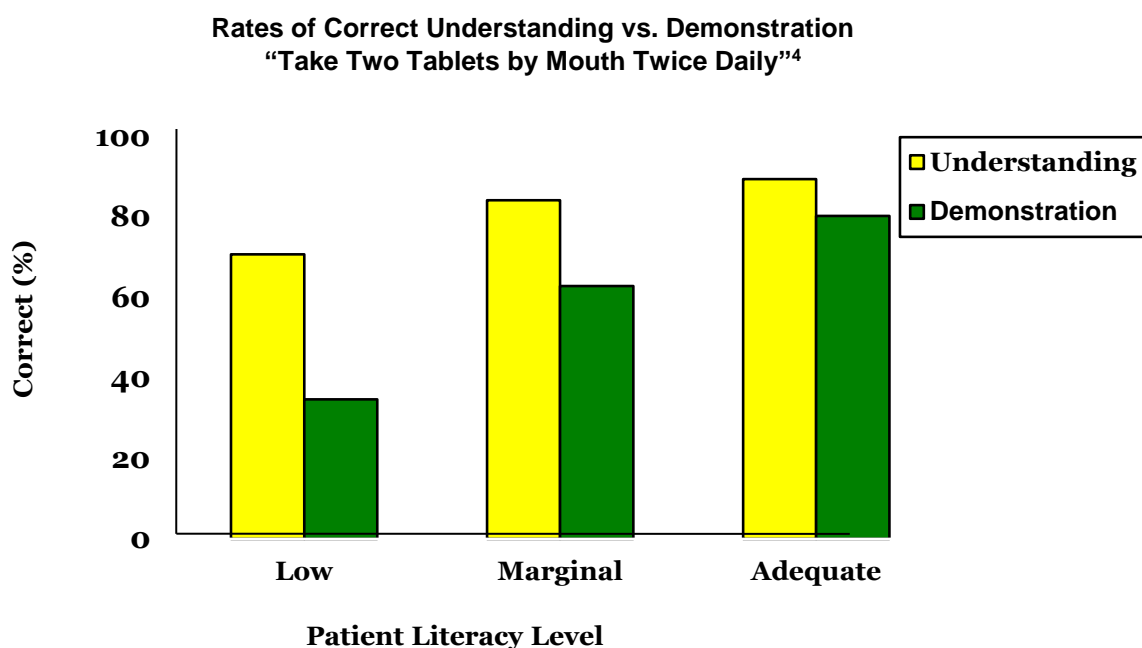
Levels of literacy in the UK[5]

Estimated that 42% of working-age adults are unable to understand and make use of everyday health information.

61% when numeracy skills were required for comprehension

Adults are considered to be "functional" in <u>literacy</u> i.e. they can function in everyday life, if they are at Level 1 and above.

15% of the adult population are **below** this level (7.45 million people).

Entry Level 1 is the expected national school curriculum level for children aged 5 - 7 yrs.

5% of the adult population are at this level (2.5 million people).

The majority of adults in England are in the **11-14** year old reading age group.

Levels of functional numeracy in the UK[5]

Adults are considered to be "functional" in numeracy i.e. they can function in everyday life, if they are at Entry Level 3 and above.

Entry Level 3 is the expected national school curriculum level for ages 9-11.

Adults with skills below this level may not be able to understand price labels on pre-packaged food or pay household bills

23.7% of the adult population is **below** this level.

6.8% of the adult population is at Entry Level 1 or below (the national school curriculum for attainment at age 5 - 7 years)

The majority of adults in England have the numeracy capabilities of a **9 year old.**

49% of Stoke-on-Trent population has limited health literacy[6]
Older age group more likely to have limited health literacy
More likely to have a self-rating of health as bad or very bad
Less likely to see regularly see close to relatives or friends
Less likely to have access to the internet
Less likely to be White British

Key points from your learning

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ACTIVITY ONE – SKILLS AND ABILITIES NEEDED FROM PATIENTS

- Whole group

- Time commitment – 5 mins

- Think about your patients and the medicines they take or the advice they ask for. **Describe the skills and abilities patients may need to have when dealing with medicines/taking medicines/asking for advice**

- Verbal feedback will be taken via 'round robin' for flipchart

- Suggested answers on handout 1

Space you to jot down your answers and thoughts to the above activity.

Key points from your learning

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Research has linked limited health literacy skills with[7]:
- ➢ Higher utilisation of treatment services

    - ▪ Hospitalisation and length of stay

    - ▪ Emergency services

- ➢ Lower utilization of preventive services

    - ▪ Screening, public health campaigns, flu immunisation

- ➢ Medicine-related issues

    (See next activity)

Higher utilisation of treatment services results in higher healthcare costs.

£5 Billion + ?

ACTIVITY TWO – CONSEQUENCES OF LIMITED HEALTH LITERACY

FOR PHARMACY

- Small group discussion

- Time commitment 5 minutes

- **What is the potential consequences of limited health literacy on a patient taking a medicine(s)**

- Verbal feedback of key points for flipchart

- Suggested answers on PowerPoint

Space you to jot down your answers and thoughts to the above activity.

Key points from your learning

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Key points from your learning

OBJECTIVE THREE - IDENTIFY PATIENTS WITH LIMITED HEALTH

LITERACY

ACTIVITY THREE - IDENTIFYING PATIENTS WITH LOW HEALTH LITERACY

- Small group work

- Time commitment 5 minutes

- **Make a list of who you think is most at risk of having limited health literacy**

- verbal feedback for the flipchart

- Suggested answers on handout 2

Space you to jot down your answers and thoughts to the above activity.

Key points from your learning

OBJECTIVE FOUR - RECOGNISE THE ROLE THAT COMMUNITY PHARMACISTS CAN PLAY IN HELPS PATIENTS WITH LIMITED HEALTH LITERACY

Health literacy is dependent on;

- Individual factors and skills

- Systemic factors and complexities

- Communication skills of healthcare professionals

Pharmacists can;

- Decrease medication errors by increasing patient counseling

- Increase patient understanding to increase patient empowerment

- Detect and prevent medication errors

- Increase staff awareness of health literacy

- Detect barriers to health literacy such as signage

- Increase level of written materials/labels

OBJECTIVE FIVE – USE HEALTH LITERACY INTERVENTIONS

1. Teach back
2. It's OK to ask
3. Chunk and check
4. Use pictures/ graphics
5. Simple language

1.   Teach back

<div style="float:left; border:1px solid; background:#8faadc; padding:10px;">
Have you explained yourself correctly?
</div>

✓ A way to make sure you—the health care provider—explain information clearly; it is not a test or quiz of patients;

✓ Asking a patient (or family member) to explain—in their own words—what they need to know or do, in a caring way;

✓ A way to check for understanding and, if needed, re-explain and check again;

✓ A research-based health literacy intervention that promotes adherence, quality, and patient safety.

Teach back;

✓ Improves 2-way communication

✓ Improves effectiveness

✓ Improves patient safety

✓ Improves skills, understanding, confidence and knowledge

✓ Addresses health inequalities

"I would like to check that I have explained things properly, would you mind telling me what it is we have discussed and what we have agreed you will do?"

"Can you tell me how you are going to explain things to your family when you get home tonight?"

"I want to make sure you have understood; can you tell me what I've asked you to do?"
"Have you understood everything we have discussed?"

ACTIVITY FOUR – TEACH BACK

- Groups of two

- Time commitment 10 minutes

- **Divide into groups of two. Each person in the group will have a role to play:**

  - **Pharmacist**

  - **Patient**

- **Refer to the handouts for instructions for each role.**

- **Switch roles after each round.**

- Verbal feedback – how did it go?

Space you to jot down your thoughts to the above activity.

ACTIVITY FOUR – TEACH BACK

Key points from your learning

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Key points from your learning

2. **Chunk and Check**

This approach can be used in conjunction with teach back, you break down the information that you are giving into small sections/chunks and after each chunk you check for understanding before moving on.

Don't wait until the end of a potentially long discussion where you are providing lots of information to check for understanding.
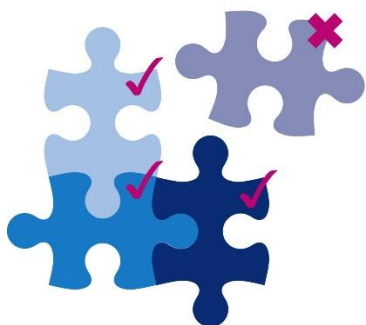
✓ Limit information

  o Focus on 1-3 key points

✓ Develop short explanations for common medical conditions and side effects

✓ Discuss specific behaviors rather than general concepts

  o What the patient needs to do

✓ Review each key point at the end and use teach back skills[8]

3. Use simple living room language

- ✓ Key points

- ✓ Slow down your conversation

- ✓ Avoid medical jargon

- ✓ Explain terms

- ✓ Use easy-to-read patient aids

- ✓ Explain things clearly in plain language

- ✓ Avoid medical jargon and technical words

- ✓ Focus on what the patient needs to know and need to do
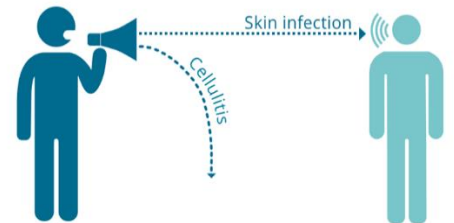
ACTIVITY FIVE – MEDICAL JARGON

- Individual working

- 3 minutes

- **Think about some terms you use every day – would this be classed as medical jargon or difficult for patients with limited health literacy to understand**

- Voluntary feedback from group

- Suggested answers on handout 4

> Space you to jot down your answers and thoughts to the above activity.

4. Use pictures

- Some concepts can be difficult to explain

- Spoken and written word is often misheard or misread and also

  misunderstood (remember the literacy slides!)

  Graphics and pictures can sometimes help communication.
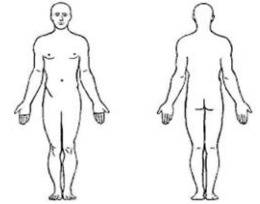
- people are more likely to recall information they have been provided with if

  they receive pictures

5. It's OK to ask

✓ Local initiative from Stoke-on-Trent City Council

✓ Many other organisations across the health economy are using ie CCG,

UHNM, Haywood hospital

✓ Making your pharmacy health literacy friendly

✓ Put up posters that have been printed and supplied.

✓ Show patients how to use the postcards containing 3 questions

✓ Wear badges

Key points from your learning

After the training session, can you answer the following?

- **Define and describe what health literacy is**

  <div style="border:1px solid black; height:150px;"></div>

- **Identify implications and consequences of limited health literacy**

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- **Identify patients with limited health literacy**

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- **Recognise the role that community pharmacists can play in helps patients with limited health literacy**

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- **Use health literacy tool and techniques**

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What changes will you make when returning to practice

-
-
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Suggested further reading

<https://www.cdc.gov/healthliteracy/developmaterials/guidancestandards.html>

<http://go.nationalpartnership.org/site/DocServer/Health_Literacy_Overview.pdf?docID=5621> These two websites offer further explanations around health literacy and its problems. In addition, they provide many ideas in which healthcare professional can help patients with limited health literacy.

<https://health.gov/communication/literacy/quickguide/Quickguide.pdf>
This document provides facts, strategies and resources to help build health literacy into the healthcare professional day to day practice.
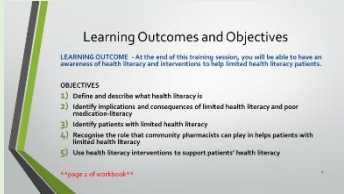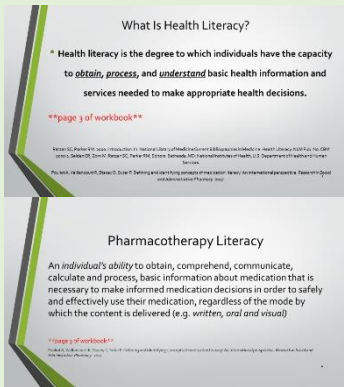
<https://www.england.nhs.uk/blog/jonathan-berry/>
This blog is by Jonathan-berry who is the national lead for health literacy in the UK. He discusses why health literacy is important and the positive impact the healthcare professional can make.
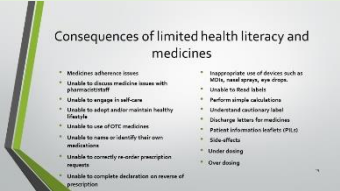
References
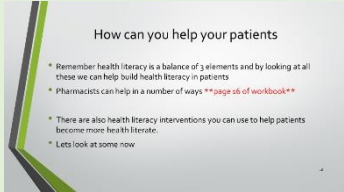
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2. Pouliot A, Vaillancourt R, Stacey D, Suter P. Defining and identifying concepts of medication literacy: An international perspective. *Research in Social and Administrative Pharmacy*. 2017.

3. Weinman J et al. How accurate is patients' anatomical knowledge: a cross-sectional, questionnaire study of six patient groups and a general public sample *BMC Family Practice* 2009;**10**:43

4. Wolf, Michael S. et al. To err is human: Patient misinterpretations of prescription drug label instructions Patient Education and Counselling, Volume 67 , Issue 3 , 293 - 300

5. Moser C. et al. Improving literacy and numeracy: a fresh start. The report of the working group chaired by Sir Claus Moser on behalf of the Department for Education and Skills. 1999. available online at http://www.lifelonglearning.co.uk/mosergroup/index

6. Rowlands G et al. Health literacy; report from an RCGP-led health literacy workshop. *Royal College of General Practitioners, 2014*. 2014:1-36

7. Joanne Protheroe, Don Nutbeam and Gill Rowlands Br J Gen Pract 2009; 59 (567): 721-723.

8. Kripalani, Jacobson (2007). AHRQ Health Literacy Universal Precautions Toolkit.
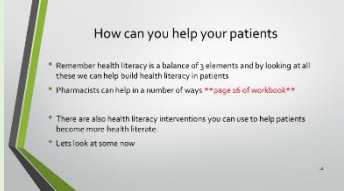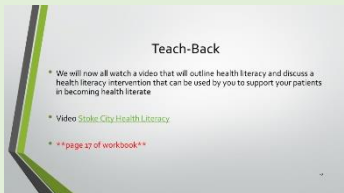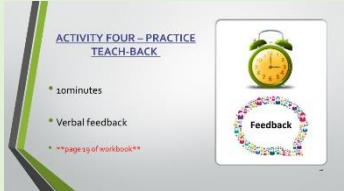
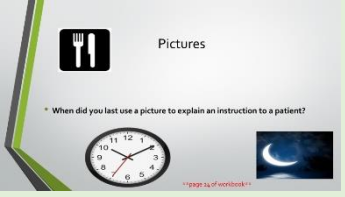|	Venue: Medical Institute	Date: 19ᵗʰ September 2017
	Session / Topic: health literacy awareness for community pharmacists and use of health literacy interventions	**Duration:** 2.5 hours (19:00 to 21:30)
	Tutor: Tania Cork	**Number of pharmacists:**
	LEARNING OUTCOMES. **To be able to have an awareness of health literacy and interventions to help limited health literacy patients.** **OBJECTIVES** • **Define and describe what health literacy is** • **Identify implications and consequences of limited health literacy and poor medication-literacy** • **Identify patients with limited health literacy** • **Recognise the role that community pharmacists can play in helps patients with limited health literacy** • **Use health literacy interventions to support patients' health literacy**	
	Resources: • PowerPoint presentation • Discussion boards and Post-it notes • Bluetac • Pointer for PPT slides • Workbook for notes and activities + pens • Handouts • Flipchart for activities and for me to write up key points (& marker pens) • Embedded video (Health Literacy: The Stoke-on-Trent story) • References for further reading and health literacy contacts (contained within PowerPoint and workbook). • Resources for 'It's OK to ask'	
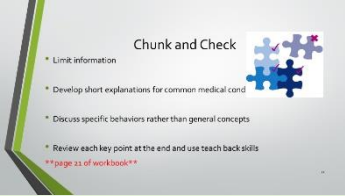
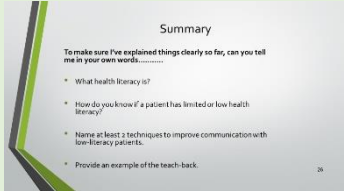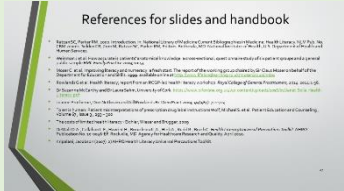| time	Content	Key points to cover	Community Pharmacist Activity	Resources
6.00pm	Trainers arrival Check both canteen and Training room	Check food will be ready for pharmacists' arrival Check training room layout check supporting technology check embedded video working (including audio) display discussion boards	N/A	
6.30pm	Delegates arrival	Welcome delegates and introduce discussion boards whilst eating and networking	Network and address the discussion boards	Discussion boards with post-it notes
7.00pm	Introductions, learning outcomes and objectives	Introduce trainer for the evening Housekeeping Give out workbooks Outline the evening agenda Show learning outcomes and objectives Discuss any learning objectives that may not needed due to prior knowledge	Listen take notes in workbook think about prior knowledge and understanding of health literacy	PowerPoint #2 Workbook pg2
7:10pm	**Learning objective 1 - Define and describe what health literacy is**	Discuss definitions Briefly discuss how the definition has changed over time Show that it is a hard concept to define (probably because it covers so many different skills and healthcare setting) Discuss the pharmacy angle specifically	Listen, learn and take notes	PowerPoint #3/4 Workbook pg3
	Discussion	To set the context for health literacy in community pharmacy To challenge the pharmacists to understand how they label medicines (i.e. provide some thought provoking research and facts)	-Respond to questions and shout out answers. Listen and link to their practice	PowerPoint #5-10

		To set a fun/entertaining learning style for this part of session Each slide has a practical point, backed up by academic and field research (& everything is referenced)	Think about their experiences with patients – what have patients told them in the past about their difficulties with medicines	To Ensure your patient has a better understanding before they leave the pharmacy Workbook pg4/5
7.30	Levels of literacy in UK and local area	Discuss the situation within the UK Give the problem some context Ask pharmacist to extrapolate figures to their patient numbers (roughly) Discuss the situation within the local area, giving local flavour. Give the problem some context Ask if figures are a surprise to them	Listen, learn and take notes Respond to questions Discuss the topic of local health literacy levels Respond to questions	PowerPoint #11 Is there a literacy and numeracy problem in the UK and locally? Workbook pg 7/8
7:40	**ACTIVITY ONE** – skills and abilities required from patients	Ask each participant to think of skills or abilities a patient needs to be able to understand and take medicines. Using round robin take feedback Give Handout 1 after round robin exhausted	write down their thoughts in their workbook Respond to questions Ask questions	PowerPoint #12 ACTIVITY ONE – SKILLS AND ABILITIES REQUIRED FROM PATIENTS * 5 minutes * Verbal feedback Feedback Workbook Handout 1
7:50	**Learning objective 2 Identify**	Briefly introduce the topic about consequences for all patients, NHS and pharmacy - low levels of health literacy both at the individual and societal level	Listen, learn and take notes	PowerPoint #13

	implications and consequences of limited levels of health literacy and medication-literacy			Workbook pg11
	ACTIVITY TWO – consequences for limited health literacy pharmacy	Small groups of 2 or 3 Question what do they think the impacts could be for pharmacy patients Produce flipchart from feedback	Think and write answers in workbook Allow time for questions Respond to questions Ask questions	PowerPoint #14, Workbook pg12 Flipchart, Pens
	Suggested answers of consequences	Show PowerPoints of examples for consequences Link to pharmacy whenever possible Allow time for questions	Answer questions Listen, learn and take notes	PowerPoint #15, Link with flipchart from activity 2
8:00	**Learning objective 3- Identifying patients with limited health literacy**	Briefly introduce the topic of identifying patients with limiting health literacy for example how healthcare professionals tend to overestimate patients literacy levels	Listen, learn and take notes	PowerPoint #16

	ACTIVITY THREE – Identifying patients with low health literacy	Small groups of 2 or 3 Identifying patients Explain who you think is most at risk of having limited health literacy	Work in small groups Feedback, from first part of question-who they identify, as round robin until exhausted answers Respond to questions	PowerPoint #17 Workbook pg14
	Identifying patients	Discuss which patients they have identified who may have limited health literacy Discuss universal precautions discuss some clues that might help to spot a patient with limited health literacy skills Summarise the things a patient with limited health literacy might say linking with pharmacy at every available opportunity	Listen, learn and take notes Respond to questions	Handout 2
8:15	**Learning objective 4 - Recognise the role that community pharmacists can play in helps patients with**	Discuss the concept of whose responsibility it is. It is the responsibility of the health care professional to be understood health literacy has two sides to the coin – patient, healthcare professional and healthcare system	Listen, learn and take notes Discuss as a whole group Respond to questions Ask questions	PowerPoint #18 Workbook pg 16

	limited health literacy			
	What pharmacists can do and when can pharmacists help?	Discuss what the overall goal is – what we are trying to accomplish Opportunities during the day to day work in a community pharmacy	Listen and take notes Discuss as a group Respond to answers	PowerPoint #18 Workbook pg 16
8:20	**Learning objective 5- use health literacy tools and techniques**	Make reference to the idea that there are interventions developed in other countries to help healthcare professionals help their patients. Suggest some interventions	Listen and take notes Ask questions Respond to questions	Workbook pg17
	Teach-Back	Discuss Teach-Back concept and how it makes a difference. Refer to referenced research to make the point play video	Listen and take notes Watch video Respond to questions	PowerPoint #19 Workbook pg17,18
8:30	**ACTIVITY FOUR – practice Teach-Back**	In groups of two practice Teach-Back skills Keep groups focused on task Help groups if struggling Take feedback of how they found the task	In pairs use the scenarios given to practice Teach-Back Feedback of how they found it.	PowerPoint #20 Workbook pg 19 Handout 3

8:45	Chunk and check	Discuss what this is and refer to research work that has used Answer any questions	Listen, take notes Respond to questions	PowerPoint #21 Workbook pg21
	Use simple language	Discuss the concept of using living room language.	Listen and reflect	PowerPoint #22 Workbook pg 22
9:00	**ACTIVITY FIVE** – medical jargon	Individually reflect on terms they may use every day. Think about terms they may consider as simple 'on an empty stomach' Take feedback if they want as this task is personal reflections	Reflect and make a list	PowerPoint #23 Workbook pg23
	Medical jargon	Suggest some commonly used terms and their replacements	Listen Add in their own ideas and thoughts if they want to.	Handout 4
	Use pictures	Discuss the use of pictures to aid verbal instructions	Listen, take notes, make further suggestions, respond to questions	PowerPoint #24 Workbook pg 24

	It's OK to ask	Discuss the local initiative and why important Show locally printed materials for them to use	Listen and take notes Respond to questions	PowerPoint #25 Workbook pg 25 Badges, postcards, pens
9:20	Summary	Re-cap on learning objectives	Respond to questions Make notes in workbook	PowerPoint #26 Workbook pg27 +28
		Mention that references and details of where to find more reading Be ready for questions from the pharmacist. Give pocket guide out	Ask questions	PowerPoint #27 Workbook Workbook pg29-30 Pocket guide
9:25	Health literacy in community pharmacy study	Brief overview of researcher's study Participation information forms in the reception area in anyone would like to take part	Listen	

9:30	close	Thank everyone for their participation. Ensure they complete evaluation sheet	Complete evaluation sheet	Evaluation forms

Health literacy is the degree to which individuals have the capacity to <u>obtain</u>, <u>process</u>, and <u>understand</u> basic health information and services needed to make appropriate health decisions.

Limited health literacy patients may;
- Misunderstanding of medicines whether prescription or OTC
- Have increased non-adherence
- Potentially over or under dose
- Have poor health outcomes Medicine waste

<u>**Everyone**</u> **is susceptible regardless of;**
- Age
- Race
- Education
- income

<u>**Everyone**</u> **benefits when communication is clear:**
- Looks can be deceiving. Offer help to all.

- Worry or illness can cloud understanding.

- Offer clear explanations.

- Check to see if <u>you</u> have been clear.

<u>**Interventions**</u> **you can use**
- Teach back
- It's OK to ask
- Ask me 3
- Chunk and check
- Simple language