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**An exploration of hospital pharmacists' attitudes
and opinions towards undertaking research**

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Abstract

Background

Research in the NHS is essential to provide evidence to improve services and patient outcomes. The Government's continued commitment to research has been made clear through the inclusion of research in key NHS policy documents including the Health and Social Care Act 2012, the NHS Constitution and, more recently, the NHS Long Term Plan. Alongside these policy documents there is also an increasing body of evidence demonstrating the impact of research on improved quality of care. Therefore, as employees of the NHS, pharmacists working in the hospital sector in the UK need to engage with research not only because of the importance of research to the NHS but also to provide the evidence base to advance the practice of pharmacy. However, engagement within the profession is limited despite the Royal Pharmaceutical Society identifying research to be a professional expectation of pharmacists.

Objectives

This research aimed to explore the attitudes and opinions of hospital pharmacists to undertaking research to understand better the drivers, drawbacks, barriers and enablers to engagement of pharmacists employed in this sector and to explore the characteristics of research-active pharmacy departments.

Methods

An initial feasibility study was undertaken with a cohort of six chief pharmacists of secondary care NHS Trusts in the West Midlands, representing four acute Trusts and two mental health Trusts. Semi-structured interviews were conducted with participants to explore their attitudes and opinions. This feasibility study informed the research approach taken for the main research study which used a mixed methods research design and comprised two phases - an

initial qualitative phase conducted using case study research methodology followed by a subsequent quantitative phase employing survey research.

For the case study research, four case study sites were identified each representing an acute secondary care teaching hospital NHS Trust in England where the pharmacy department had comparatively high levels of research activity among pharmacists together with a model of support for pharmacists to undertake research. At each case study site, individual semi-structured face-to-face interviews were conducted with the chief pharmacist and a cohort of research-active pharmacists. Interviews were audio-recorded and transcribed verbatim, with thematic analysis used to analyse the data. The survey phase of the research was undertaken to establish how widely the case study research findings were shared among chief pharmacists of acute secondary care NHS Trusts in England. To conduct the survey, a structured questionnaire was developed based on the case study research findings, and the questionnaire was distributed as a self-administered web-based survey.

Results

Lack of time and difficulty obtaining funding appeared to be the most significant barriers to engagement, as well as lack of personal competence in research and organisational culture i.e. research not being prioritised. A lack of understanding and awareness of research within the profession was also identified, as was a lack of appreciation of the value of research in relation to improving practice. Key enablers identified included allowing pharmacists time to conduct research, whether that be through research being integrated into pharmacists' roles or through funding enabling individuals' roles to be backfilled, and pharmacists having access to individuals with research expertise within their departments. Gaining research expertise through postgraduate qualifications was also identified as an enabler. Research experience was identified as a significant driver for pharmacists to undertake further research, as was a pharmacy department having a culture for research. Drawbacks identified related to the

impact of research on service delivery, and the difficulty associated with backfilling posts with funding from research grants.

The pharmacy departments in the case study phase of the research all had a culture for research which was evident through research being made visible within departments via promotion of research opportunities and promotion of research activity, the existence of departmental research forums, and having departmental leadership for research. All four case study sites had mechanisms in place to support pharmacists to undertake research. These included allowing pharmacists time to conduct research and employing a lead pharmacist for research who had research expertise. The leadership of the chief pharmacist appeared to be key to developing a research culture within the department and to ensuring such mechanisms of support were in place. All of the case study sites also had a culture for research at Trust level. However, the influence of the Trust culture on pharmacy-led research was unclear, although it was recognised to potentially make such research easier to undertake suggesting it removed some of the contextual barriers to engagement.

Conclusions

To increase engagement with research among pharmacists in the hospital sector, pharmacists need time to conduct research and need access to research expertise. The leadership of the chief pharmacist appears to be key to pharmacists employed in this sector having this support. Pharmacists also need to better understand the importance of research to their practice and how to engage with research. To achieve this there needs to be a culture change at professional level. In addition, pharmacists lack the knowledge and skills to undertake research from their undergraduate degree. Exposing pharmacists to research early in their careers may not only equip them with the knowledge and skills to undertake research but, as research experience was identified as a driver for engagement, it would have the potential to instil in them a desire to undertake further research throughout their career.

Relevant publications

Shenton, J., Fitzpatrick, R., Gifford, A. (2017) An exploration of chief pharmacists' attitudes and perceptions towards hospital pharmacists undertaking research. *International Journal of Pharmacy Practice*. 25 (Suppl. 1), 55. Available from: [doi/epdf/10.1111/ijpp.12368](https://doi.org/10.1111/ijpp.12368)

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My heartfelt thanks also go to my darling Mum and Dad, without whom I wouldn't have found the time and energy to finish, and to my husband James for his patience and for keeping everything going while I've written up my research. My thanks also go to Fizzy the dog for his companionship throughout writing this thesis.

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List of abbreviations

AfC	NHS Agenda for Change
AHSC	Academic Health Science Centre
APU	Academic Practice Unit
CQC	Care Quality Commission
DPharm	Doctor of Pharmacy
DHSC	Department of Health and Social Care
HEE	Health Education England
HRA	Health Research Authority
IMP	Investigational Medicinal Product
IRAS	Integrated Research Application System
MHRA	Medicines and Healthcare products Regulatory Agency
NHS	National Health Service
NHSEI	NHS England and NHS Improvement
NIHR	National Institute for Health Research
PhD	Doctor of Philosophy
RCP	Royal College of Physicians
RPS	Royal Pharmaceutical Society
WM	West Midlands

1 Overview of the thesis content and structure

The research presented in this thesis is an exploration of hospital pharmacists' attitudes and opinions towards pharmacists undertaking research. This was conducted between September 2015 and December 2019 for a Professional Doctorate in Pharmacy (DPharm) at Keele University. The DPharm programme at Keele University comprises two parts of which part 1 is undertaken during the first two years whilst part 2 is carried out from year 3 onwards. Part 1 consists of modules relating to advanced professional practice, leadership, change management, and research and evaluation. A research project is undertaken for one of these modules and is referred to as an 'initial study'. Part 2 consists solely of research activity (Keele University 2019a). Therefore, there are two elements to the research presented in this thesis – the initial study undertaken in part 1 and the research undertaken in part 2. Accordingly, this chapter has been included in the thesis to provide both an overview of the various elements to the research and also to outline how the thesis is structured.

1.1 Content of the thesis

The focus of the thesis is the research conducted in part 2 of the programme referred to herein as the 'main research study'. A summary of the initial study undertaken in part 1 is also included as this took the form of a feasibility study to inform the research undertaken in part 2. A brief outline of the research undertaken in each part of the programme is given below. For ease of reference, a flowchart is provided outlining each of the elements to the research (Figure 1).

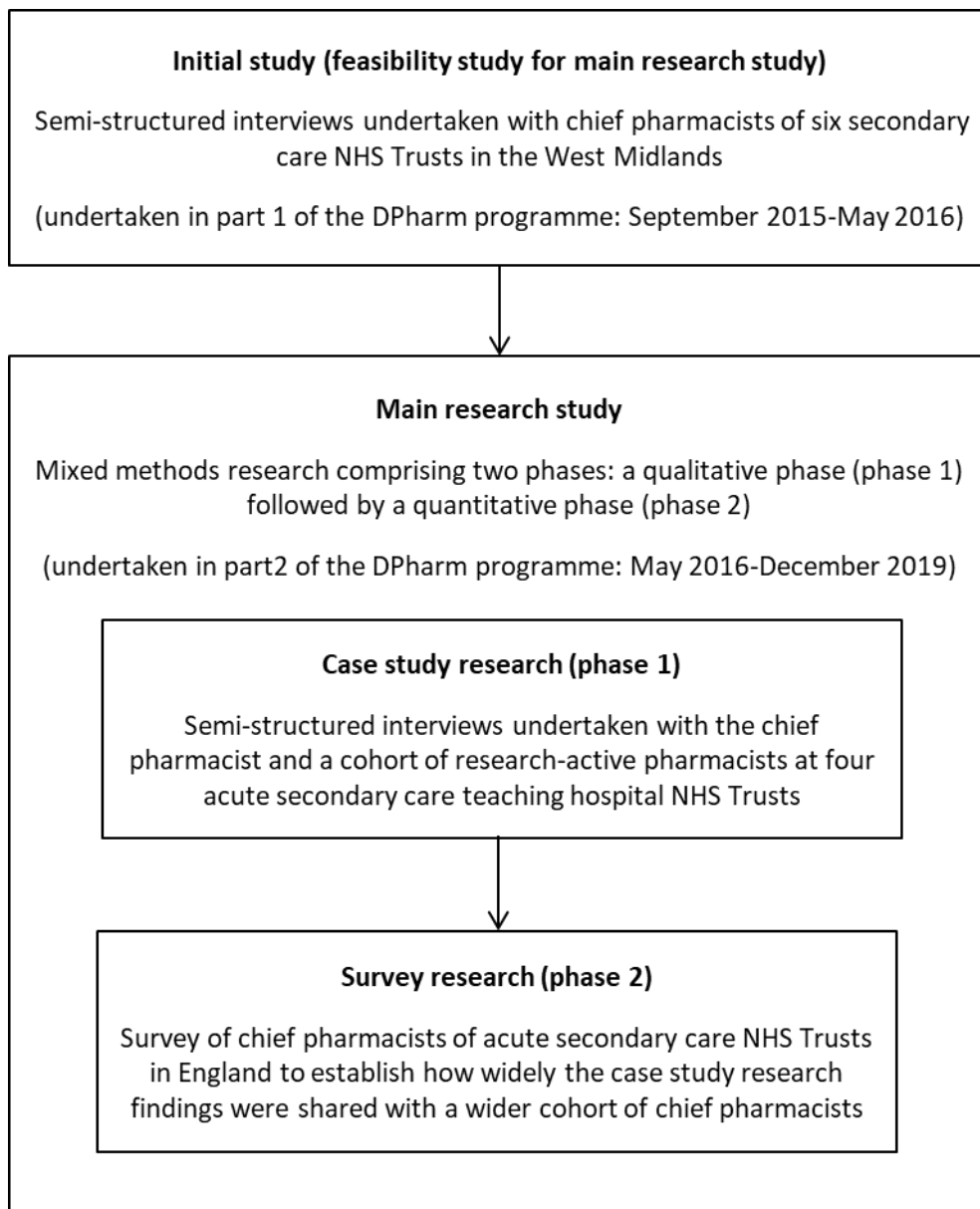


Figure 1: Flowchart outlining the elements of the research

1.1.1 The initial study

The study comprised an exploration of the attitudes and opinions of chief pharmacists towards pharmacists undertaking research. Qualitative methodology was used to conduct the study which involved semi-structured interviews with chief pharmacists of six secondary care NHS Trusts in the West Midlands. As the initial study took the form of a feasibility study for the main research study, the findings and learning from undertaking the initial study were used to inform the research design of research undertaken in part 2.

1.1.2 The main research study

Mixed methods research was used comprising two phases i.e. a qualitative phase followed by a quantitative phase.

Case study methodology was used in the qualitative phase which involved the use of semi-structured interviews with the chief pharmacist and a cohort of research-active pharmacists at each of four case study sites to explore their attitudes and opinions towards pharmacists undertaking research. The case study sites were all acute secondary care teaching hospital NHS Trusts in England with research-active pharmacy departments selected on the basis of each having different models of support for pharmacists to carry out research together with high levels of research activity among the pharmacists employed.

In the subsequent quantitative phase, survey research was conducted to establish how widely the findings of the case study research were shared among chief pharmacists of acute secondary care NHS Trusts in England. To undertake the survey, an online questionnaire was developed based on the case study research findings.

1.2 Structure of the thesis

For the most part, the thesis follows a 'traditional' format although the structure deviates in parts because, as outlined above, the research was undertaken in various stages. Each stage

was informed by the findings of the previous one. Consequently the main research study carried out in part 2 of the programme was informed by the findings of the initial study undertaken in part 1. Likewise, the survey research for the main research study was informed by the findings of the case study research.

The structure differs from a traditional format for the following reasons:

- The initial study took the form of a feasibility study for the research undertaken in part 2 of the programme, and is therefore reported separately from the main research study as a standalone chapter.
- Two literature reviews were undertaken during the course of the research i.e. one to inform the initial study and the other for the main research study. Each literature review is reported as a separate chapter. The reasons for this are two-fold - firstly the scopes of the literature reviews for the initial study and main research study differed due to the findings of the initial study influencing the literature searched for the second review, and secondly the findings of the main research study are discussed in the context of the literature included in both reviews.
- As the main research study was undertaken in two phases, the methods and results for each phase are reported together. Therefore, rather than there being a methods chapter and a separate results chapter for the main research study, there is a chapter in which the case study methods and results are reported, and another where the survey research methods and findings are reported.

To help the reader follow the structure of the thesis, Table 1 below outlines the content of each chapter. In addition, Figure 1 above is repeated throughout the thesis to highlight the element, or elements, of the research to which particular chapters pertain.

Table 1: Summary of the content of each chapter

Chapter number	Chapter title	Chapter content
1	Overview of the thesis content and structure	Outlines how the various elements to the research are presented in the thesis and how the thesis is structured
2	Introduction	Outlines the background to the research
3	Literature review for initial study	A review of literature relating to pharmacists' attitudes and opinions towards research published before the initial study was undertaken
4	Initial study	Outlines the methods used to undertake the study and the findings, and includes a discussion of the findings in the context of the literature reviewed in chapter 3; also outlines how the findings and learning from the initial study informed the research design of the main research study
5	Main research study and objectives	Outlines the main study research aims and objectives
6	Literature review for main research study	A review of literature relating to pharmacists' attitudes and opinions towards research published since the initial study was undertaken together with a review of the literature relating to the findings of the initial study which influenced the design of the main research study
7	Main research study methodology	Outlines the methodology used for the main research study including the rationale for using mixed methods research, and the rationale for using case study research methodology in the initial qualitative phase and survey methodology in the subsequent quantitative phase
8	Case study research	Outlines the methods used to undertake the case study research and the findings
9	Survey research	Outlines the methods used to undertake the survey research and the results
10	Discussion	Includes a discussion of the main research study according to the research objectives

Table 1 continued

Chapter number	Chapter title	Chapter content
11	Reflexivity	Outlines how my professional background and experience may have influenced the research and the steps taken to minimise the effect of this on the research validity
12	Limitations and future work	Outlines the limitations of the main research study as well as suggestions for future research
13	Conclusions	Summarises the overall findings of the research
14	References	Lists the references cited in the thesis
15	Appendices	Contains the appendices referred to in the thesis text

2 Introduction

In this chapter I outline my professional background and the rationale for conducting research to explore the attitudes and opinions of hospital pharmacists towards undertaking research.

2.1 My professional background

To provide some context, in this section I will outline my professional background and how I came to study for a Professional Doctorate in Pharmacy (DPharm).

In my current role I am Lead Pharmacist for National Institute for Health Research (NIHR) Clinical Research Network West Midlands (CRN WM). At the time of beginning my research, the NIHR was the 'research arm' of the NHS (NIHR 2018b) whose vision was to improve the health and wealth of the nation through research by providing *'a health research system in which the NHS supports outstanding individuals working in world-class facilities, conducting leading-edge research focused on the needs of patients and the public'* (NIHR 2018c). Since starting the research, while the vision of the NIHR remains the same, its scope has expanded to include both health and social care research (NIHR 2019e).

The Clinical Research Network is part of the NIHR, whose purpose is to provide the infrastructure to support patients, the public, and health and care organisations to participate in high-quality research. Clinical Research Network West Midlands is one of 15 geographically-based Local Clinical Research Networks comprising the CRN in England (NIHR 2019a). My role as Lead Pharmacist for CRN WM is to provide professional leadership and advice to pharmacy staff based in the region who are involved in delivering research. When I first joined, my role focused mostly around supporting pharmacy staff involved in the management of clinical trials medicines in secondary care. However, as the role has evolved, the remit has been extended and now also includes provision of leadership and advice to pharmacy staff working in primary care, as well as working to increase involvement of pharmacists across all sectors with

research. Examples of such involvement include leading their own research or contributing to or supporting the delivery of research led by others through the identification and recruitment of participants into studies, prescribing in clinical trials, or as a principal investigator for a multi-centre study i.e. being responsible for the overall delivery of a study at a site (MHRA 2012).

Before working for the CRN, my career was based mainly in secondary care in roles which included Senior Pharmacist Patient Services and Clinical Governance for a large acute teaching hospital NHS Trust and as Medicines Management Interface Pharmacist. The latter role involved working across the interface between commissioners and the acute Trust as well as other providers in the local health economy. It was through these roles that I became involved with research, albeit different aspects of the research process. As Senior Pharmacist for Patient Services I was responsible for managing clinical trials medicines for studies being undertaken by the Trust, and therefore involved in research delivery. In the Medicines Management Interface Pharmacist role, I used research evidence to develop guidelines and manage requests for the incorporation of new medicines onto the local health economy medicine formulary. For one such request, the evidence for the medicine in question was based on the outcomes of a study I recognised as one in which I had been involved in the delivery in my previous role as Senior Pharmacist Patient Services and Clinical Governance. It was this experience that made my contribution to research as a pharmacist feel 'real'.

I believe it is important to provide this background detail as it is through my involvement in research in these roles that I gained an awareness and understanding of the importance of research to the NHS. This then led me into my current role with the CRN, where my passion and interest in research has really grown. As outlined above, prior to working for the CRN I had really only undertaken roles which supported research delivery and used research in the context of evidence-based medicine. Since joining the network, however, I have worked

alongside and collaborated with individuals leading their own research in both the NHS and academia. This sparked my interest to undertake research myself and led me to explore options which would allow me to do this. I chose a Professional Doctorate as this allowed me to continue to practise as a pharmacist in my role with the CRN while at the same time undertake research, and develop my management and leadership skills.

2.2 Overarching research aim

The overarching aim of this research was to explore how to engage more hospital pharmacists with research, and it was my passion to undertake research myself that led me to conduct research in this area. Working for the CRN I had observed that, outside of managing clinical trials medicines, pharmacists did not appear to be particularly engaged with research, with only a limited number in the West Midlands leading their own research. The idea for this study therefore was to find ways to engage more pharmacists with research by exploring their attitudes and opinions towards undertaking research. I also wanted to focus on how to engage more pharmacists working in the hospital sector as this is where my professional interest principally lies because, as outlined above, my professional practice has been mostly based in secondary care. By gaining a better understanding of how to engage hospital pharmacists with research through this study, the intention was that I could then not only apply the findings to my professional practice as Lead Pharmacist CRN WM, but also that, as the need to engage pharmacists with research is both a local and national issue, the findings might also be used to inform national policy.

In this thesis I explain how I carried out the research, and report my findings. However, in the sections that follow in this chapter, I first outline why research is important both to the NHS and to pharmacy as a profession.

2.3 Research and the NHS

Research is essential in providing evidence to transform services and improve outcomes in the NHS (NHS England 2019b). Its importance to the NHS was made evident in the 2006 Department of Health research strategy 'Best Research for Best Health' which described research as 'core business' (Department of Health 2006). Since then the Government's continued commitment to research in the NHS has been made clear in the Health and Social Care Act 2012, which places a legal duty on the NHS to promote research and the use of research evidence (Act of parliament 2012). The NHS Constitution also includes a '*commitment to innovation and to the promotion, conduct and use of research to improve the current and future health and care of the population*' (p.3) (DHSC 2015). This commitment has also been reaffirmed in other documents including the 'NHS Five Year Forward View' (NHS England 2014), 'Next Steps on the NHS Five Year Forward View' (NHS England 2017) and most recently 'The NHS Long Term Plan' which recognises the importance of research and innovation to drive future outcomes improvement (NHS England 2019a). In addition, the Government's mandate to the NHS for 2018-19 also included an objective for the NHS to '*support research, innovation and growth*' (p.12) (DHSC 2018).

However, the Government also recognises that the benefits of research in the NHS are not limited to better health outcomes for patients. Government papers such as the 'Plan for Growth' (HM Treasury, Department for Business, Innovation and Skills 2011) and 'Strategy for Life Sciences' (Department for Business, Innovation and Skills and Office for Life Sciences 2011) describe the contribution of research to the economic growth of the UK via the life sciences industry. In 2017 the Life Sciences Industrial Strategy (Office for Life Sciences 2017) set out an ambition to further improve UK clinical trials capabilities, reaffirming a commitment to research in the NHS albeit clinical trials in life sciences. In response to the Life Science Industrial Strategy, a Life Sciences Sector Deal was released at the end of 2017 (HM

Government 2017) followed by a second deal released in 2018 which included a commitment to increase public and private research and development spend to reach 2.4% of GDP (Gross Domestic Product) by 2027 (HM Government 2018). To give some context to the contribution of commercially-funded clinical research to the NHS, an independent NIHR-commissioned report published in 2019 (KPMG 2019) found that NHS Trusts received an average of £9189 in revenue from life sciences companies for each patient recruited into a commercial study i.e. funded by either industry or a private company. In the financial year 2018/19 this equated to an estimated total of £355 million in commercial income. In addition, it was estimated that, for the same period, the pharmaceutical cost savings achieved when life sciences companies provided drugs free of charge to patients in clinical trials totalled £28.6 million. The overall economic contribution of clinical research supported by the CRN to the UK was also reported and stated that over the 3-year period 2016/17 to 2018/19 an estimated total of £8 billion in GVA (Gross Value Added) and 47,467 full-time equivalent jobs were generated by CRN-supported clinical research activity.

Alongside Government policy driving research activity in the NHS, there is also an increasing body of evidence that demonstrates the impact of research in terms of improved quality of care (Davies 2016). Perhaps the most significant of these studies is a large population-based study published in 2017 which demonstrated a strong association between research activity and better patient outcomes (Downing et al. 2017). Using colorectal cancer as an example, the study found patients treated in hospitals with high, sustained hospital-level participation in interventional clinical trials had lower mortality and fewer postoperative complications. Furthermore, the benefits applied not just to patients who had participated in a clinical trial, but to all patients including those with the condition but who had not participated in such a study. Similar findings have also been shown in relation to research activity and reduced risk of mortality. For example, a study published in 2015 found that based on population data, research-active Trusts had a lower risk-adjusted mortality for acute admissions (Ozdemir et al.

2015). Likewise, a study published in 2012 also demonstrated a significant correlation between academic output and improved mortality rates, with academic output defined as the number of citations per admission as this was deemed to reflect both research activity and workload (Bennett et al. 2012). Improved survival of patients treated in more research-active hospitals has also been found in studies undertaken in the USA in coronary artery disease (Majumdar et al. 2008) and in ovarian cancer in Germany (Du Bois et al. 2005, Rochon, Du Bois 2011). Similarly, another study published in 2018 also reported a correlation between NHS Trusts' clinical trials activity and lower mortality rates particularly in relation to the number of participants recruited into interventional studies (Jonker, Fisher 2018). As well as being linked to reduced mortality, research activity has also been found to be associated with better healthcare performance. For example, a review of the literature relating to research engagement published in 2015 found a positive association between research engagement by healthcare organisations and improvement in performance through improved processes of care (Boaz et al. 2015).

Evidence of an association between research activity and better patient outcomes has led to there being a call for more research to be undertaken in the NHS. For example, the Royal College of Physicians (RCP), in response to the growing body of evidence, issued the policy statement 'Delivering research for all: expectation and aspirations for the NHS in England' (RCP 2019). In this the RCP not only state the importance of every clinician working in the NHS to be research active, but also call for Trusts to increase their research activity and support clinicians to pursue research to enable more patients to have the opportunity to be involved with, or benefit from, clinical research. Also in response to there being evidence of research being associated with improved outcomes for patients, the NIHR has recently announced a new campaign, 'Your Path in Research', which aims to inspire more healthcare professionals to become involved in research (NIHR 2019c). In a recent article published in the Health Services Journal, Dr William Van't Hoff (NIHR Clinical Director for NHS Engagement) also asked 'Why

isn't every hospital and healthcare professional in the UK supporting research?' (William Van't Hoff 2019). Lastly, recognition of the role of research in improving patient care has led to the recent inclusion of questions relating to research activity in the Care Quality Commission (CQC) leadership inspection framework for providers i.e. the Well Led Framework (CQC 2018, NIHR 2019b). Perhaps one of the most important reasons for research being undertaken in the NHS, however, is that patients and the public perceive it to be important. This is demonstrated by a survey commissioned by the Health Research Authority (HRA) and NIHR in 2017, in which 83% of respondents were reported to have said health research was very important (Hunn 2017).

The reasons clinical research should be conducted in the NHS outlined in this section are those relating to the contribution of research to the health and wealth of the nation. In the following section I will outline why pharmacists need to engage more with research as a profession.

2.4 Research and pharmacists

Pharmacists employed in the NHS need to undertake research not only because research is important to the NHS for the reasons outlined above but because research is needed to advance pharmacy practice. The practice of pharmacy has evolved in recent decades from a predominantly supply and dispensing function to providing services with a greater clinical emphasis (Howe, Wilson 2012). For practice to continue to advance it needs to be evidence-based. The King's Fund defined pharmacy practice research as *'research which attempts to inform and understand pharmacy and the way it is practiced, in order to support the objectives of pharmacy practice and to ensure that pharmacists' knowledge and skills are used to best effect in solving the problems of the health service and meeting the health needs of the population'* (p.46) (Mays 1997). For the practice of pharmacy to be evidence-based, practice research is therefore needed and this need has been recognised in pharmacy literature. In an article published in the Pharmaceutical Journal in 2015 the *'increasing importance of evidence-*

based interventions' (p.683) was cited in the context of research needing to be conducted as part of routine pharmacy practice to provide evidence of the efficacy of interventions made by pharmacists (Robinson 2015). Likewise, it has been recognised in the literature that pharmacy practice research is needed to provide evidence for the new and extended roles for pharmacists associated with practice developments (Krass 2015, Roberts, Kennington 2010). Practice research is therefore one example of how pharmacists can engage with research.

However, pharmacists' involvement with research is not limited to practice research as they are also ideally placed to contribute to the design and delivery of research studies which extend beyond the scope of pharmacy practice (Department of Health 2008). This is illustrated in a review of post-registration career development which suggests that pharmacy research activity falls into four overarching and overlapping domains - practice research, pharmaceutical science, clinical research and trials, and inter-disciplinary research (Howe, Wilson 2012). Koshman and Blais (2011) in a letter to the Canadian Journal of Hospital Pharmacy entitled 'What is pharmacy research?' also suggest pharmacy research to not be restricted to practice research in that they say '*not all research in which pharmacists are involved reflects their practice, nor can it solely reflect the practice of pharmacists, especially in the era of collaborative practice teams*' (p.154) and '*research done by pharmacists may address important questions that facilitate improved patient care or service delivery, without specifically advancing pharmacy practice, but still contributing to the scientific literature as a whole*' (p.154). Pharmacists can therefore not only engage with the NHS research agenda by undertaking research into the practice of pharmacy itself, but also by leading or contributing to research which extends beyond the scope of the pharmacy practice into the wider healthcare context.

Generating evidence is not the only reason for pharmacists employed in the NHS to engage with research. Research is also recognised as a fundamental part of professional practice for

pharmacists by their professional body in the UK i.e. the Royal Pharmaceutical Society (RPS). The RPS considers research to be an integral part of practice for pharmacists working across all sectors and at all stages of career development, as evidenced by the inclusion of research in both the RPS Foundation Pharmacy Framework (RPS 2014b) and RPS Advanced Pharmacy Framework (RPS 2013). For pharmacists working in secondary care, the RPS Professional Standards for Hospital Pharmacy Services includes a requirement for pharmacy teams to lead, actively participate in and publish research (RPS 2017). For those in more senior positions, the NHS Agenda for Change job profiles for 'advanced level' pharmacists, i.e. Band 8a/b or above, include a requirement for pharmacists to undertake research in their own area of practice (NHS Employers 2015). Likewise, the descriptor for consultant pharmacist posts also includes a remit to provide leadership in research (Malson 2015). Furthermore, research has also been recognised as one of four pillars of advanced practice in the recently published 'Multi-professional framework for advanced clinical practice in England' by Health Education England (HEE 2017). Although not specific to pharmacists as a profession, the framework is intended to be multi-professional, and therefore encompasses pharmacists.

However, despite recognition of the need for pharmacists to engage with research, as a profession involvement is lacking. The need for more pharmacy practice research has, for example, been reported in the *Pharmaceutical Journal* as long ago as 2006 (Bond 2006), and was highlighted again more recently in an article published in 2015 which reported a need to 'boost engagement' with pharmacy practice research (Krass 2015). The need for increased research engagement was perhaps more notably emphasised in the Department of Health White Paper 'Pharmacy in England: Building on strengths- delivering the future' published in 2008 (Department of Health 2008). This set out proposals to both increase research into pharmacy services i.e. pharmacy practice research, and increase engagement with research more widely by, for example, increasing pharmacy involvement with clinical research and clinical trials. In the time since its publication, engagement may have increased as a result of

the report. However, more recently it has been reported that pharmacists applying to join the RPS Faculty find the Research and Evaluation competency cluster of the Advanced Pharmacy Framework the most challenging to complete suggesting there is still a lack of engagement across the profession (Barnett et al. 2018). In addition, the NIHR conducted a review of their training programmes in 2017, and found pharmacy as a professional group to be underrepresented (NIHR 2017).

Interestingly, the need to increase engagement with research in the NHS is not limited to pharmacists as a profession. The recently published NIHR Clinical Research Network Allied Health Professionals Strategy 2018-2020 recognises the need to strengthen the research capacity and capability of this group (NIHR 2018a). Likewise, regarding nurses and midwives, studies have identified there to be no real expectation for members of these professions to lead research (Moore et al. 2012) and, as professional groups, they were also identified as being underrepresented compared to Allied Health Professionals in the NIHR training programme review undertaken in 2017 (NIHR 2017). The NIHR has also recently established a 'Nursing and Midwifery Incubator' to accelerate capacity building and support the development of a clinical academic research workforce across these professions (NIHR 2019d). The need for increased engagement with research also extends to the medical profession as illustrated by the recent publication of a paper by the RCP titled 'Research for all: Building a research-active medical workforce' which was based on the findings of a 2015 UK survey undertaken to explore the barriers to doctors' engagement in medical research (RCP 2016). The paper included several recommendations to increase engagement among the medical profession therefore suggesting a need to engage more doctors with research. Also illustrating the need to increase engagement not being limited to pharmacists as a profession, are two reports commissioned to explore ways to increase NHS staff engagement with research. The first report was commissioned by Cancer Research UK and examined barriers to research and steps needed to promote a stronger research culture in the NHS (Brown et al. 2015). The

second was commissioned by The Healthcare Improvement Studies Institute and similarly explored challenges in relation to NHS engagement with research, together with potential enabling mechanisms (Dimova et al. 2018).

The need to increase pharmacists' engagement with research is not an issue limited to the UK. The results of a recent survey of European Statements of Hospital Pharmacy undertaken in 2017 found only 30% of responses to the statement 'the pharmacists in our hospital routinely publish hospital pharmacy practice research' to be positive and 75% of all respondents indicated that they had produced less than two external presentations/papers/posters in the previous year and 50% said they had produced none (Horák et al. 2018). This suggests a European-wide lack of engagement amongst the profession. The American College of Clinical Pharmacy (ACCP) Research Affairs Committee also published a White Paper in 2006 entitled 'The State of Science and Research in Clinical Pharmacy' (Fagan et al. 2006). The paper included a vision for clinical pharmacists in terms of research involvement as part of the ACCP's strategic plan, and described gaps between the envisioned state of clinical pharmacy research in 2030 and that of 2006 with recommendations for how to narrow these gaps, illustrating a need to increase involvement.

2.5 Summary

In summary, research is important to the NHS and there is a need to engage more pharmacists with research. By exploring hospital pharmacists' attitudes and opinions towards research the aim of this research was to better understand how to increase engagement among pharmacists working in this sector. As opposed to other branches of the profession such as community pharmacy or primary care, hospital pharmacy was chosen because, as outlined earlier in the chapter, this is the sector with which I am professionally most familiar and where my personal interest lies.

As outlined in chapter 1 the research presented in this thesis was undertaken in two parts: an initial study undertaken in part 1 of the DPharm programme and the main research study undertaken in part 2. As also outlined in chapter 1, the initial study took the form of a feasibility study for the research undertaken in part 2, and comprised a qualitative study in which the attitudes and opinions of six chief pharmacists of acute secondary care NHS Trusts in the West Midlands were explored. The following two chapters pertain to the initial study. In chapter 3 the literature review for the initial study is summarised, and in the subsequent chapter a précis of the study is presented. The initial study is highlighted in Figure 2 below within the context of the various other elements of the research presented in the thesis.

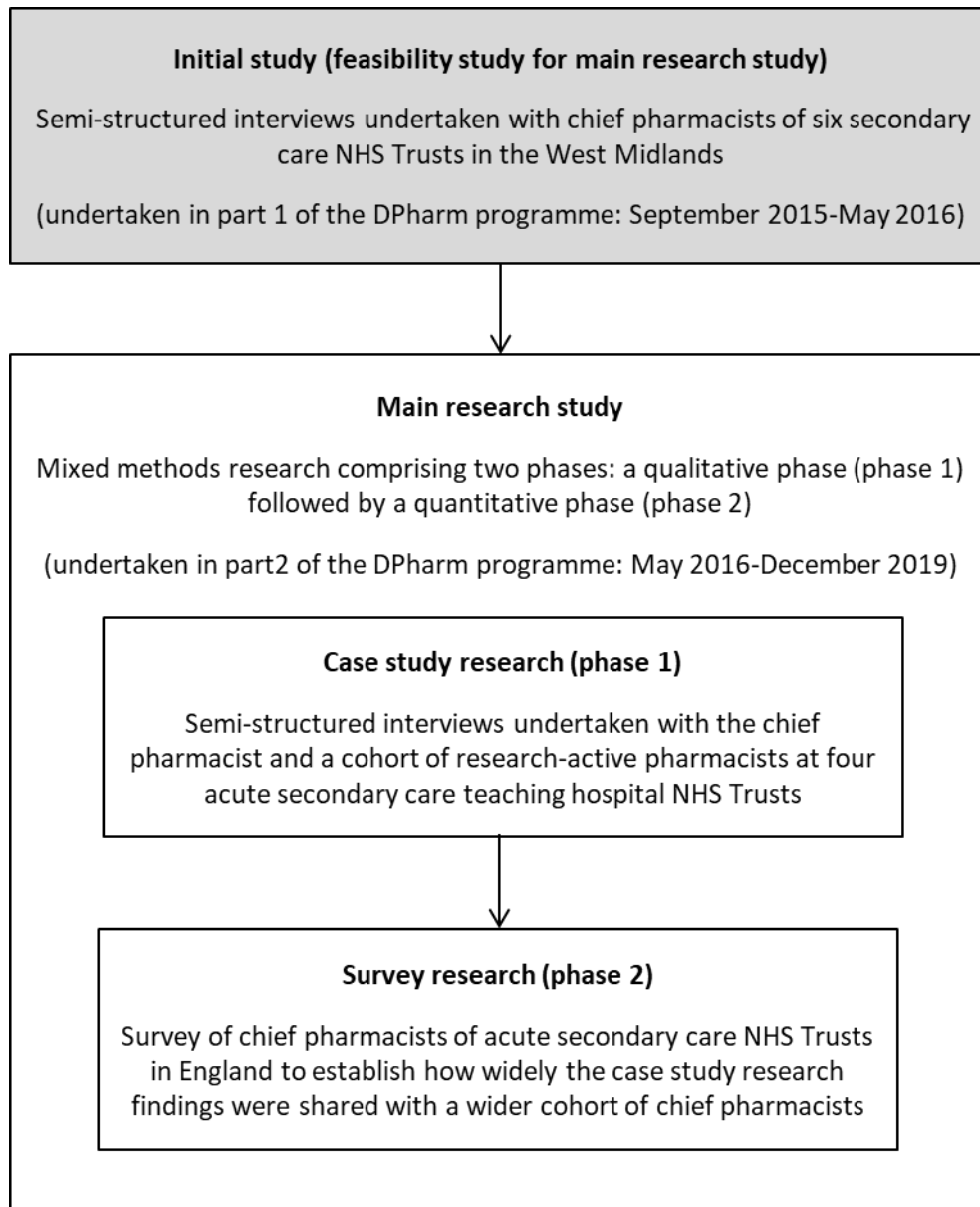


Figure 2: Flowchart highlighting the initial study

3 Literature review for the initial study

The literature review was undertaken in two phases - the first as part of the initial study in part 1 of the DPharm programme and the second as part of the main research study undertaken in part 2. The literature review undertaken as part of the initial study is presented in this chapter. The literature included in this phase of the review relates to pharmacists' attitudes and opinions towards undertaking research published up to when the initial study was completed in May 2016. Relevant papers published following completion of the initial study are included in the second phase of the review, an account of which can be found in chapter 6. To undertake the literature review for the initial study, a literature search was first undertaken as is outlined in section 3.1 below.

3.1 Search strategy

To identify research papers, a search of relevant databases was undertaken using various software packages available through Keele University comprising but not exclusively EBSCO, ProQuest and Web of Science. A complete list of databases searched using these software packages is listed in appendix 1. The search terms used in the database searches are listed in Table 2 below.

Table 2: Search terms used in the database searches relating to pharmacists attitudes and opinions towards undertaking research

Terms to which search terms used pertained	Search terms used in database searches
Pharmacists	Pharmacist* Pharmacy
Attitudes and opinions	Attitude* Opinion* Perception* View* Perspective* Barrier* Facilitator*
Research	Research*

Searches for all search terms were limited to title and subject/keyword except for research* which was limited only to title. All searches were also limited to human studies only and those published in English. Limits to publication dates were not applied to searches. Boolean operators i.e. AND and OR were used to refine the search. For details of how the Boolean operators were used to combine and limit the search terms refer to appendix 2. Also detailed in appendix 2 are the numbers of references identified at each stage of the searches undertaken.

Following the database searches, references duplicated between the databases were identified and removed, leaving a combined total of two hundred and twenty two references. The titles and abstracts of these remaining references were then reviewed. However, the majority of the studies identified from the database searches were found to be examples of

pharmacy practice research and were not relevant as they did not explore pharmacists' attitudes and opinions towards undertaking research.

Following this review of the study titles and abstracts, eight references were deemed relevant for inclusion in the literature review including a systematic review of peer reviewed literature (1990-2014) published in 2015 which synthesised pharmacists' involvement in and attitudes towards pharmacy practice research (Awaisu, Alsalimy 2015). Further references were then identified from citations in these references, several of which were papers published in professional magazines such as the Pharmaceutical Journal. These papers would not have been identified through the database searches as they were not published in journals included in the databases. In total, eighteen primary research papers were identified for inclusion in the literature review, in addition to the systematic review referred to above. As the intention was to continue to research the same subject for the main research study in part 2 of the DPharm programme, alerts were set up at the time of the initial database searches to highlight any further papers published which met the search criteria. Relevant studies published after completion of the initial study then formed part of the second phase of the literature review as outlined above.

A review of the research papers identified through the literature search for the initial study is presented in the next section.

3.2 Summary and critical analysis of the literature for the initial study

Eighteen primary research studies were identified from the literature search. These were conducted in several countries and across different sectors of practice and employed various methodologies including qualitative, quantitative and mixed methods approaches. Table 3 below provides a summary of the methodological approach used, the country where the research was undertaken, and the area of practice to which the research pertains for each of these studies, listed chronologically by publication date.

Table 3: A summary of the studies included in the initial study literature review

Study authors	Year of publication	Methodological approach	Country research conducted	Study participants
Davies et al.*	1993	Mixed methods (survey and structured interviews)	UK (England)	Hospital pharmacists
Ellerby et al.*	1993	Quantitative (survey)	UK (Scotland)	Community pharmacists
Liddell*	1996	Quantitative (survey)	UK (England)	Community pharmacists
Krska et al.*	1998	Quantitative (survey)	UK (Scotland and Wales)	Community pharmacists
Rosenbloom et al.*	2000	Quantitative (survey)	UK (England)	Community pharmacists
Simpson et al.*	2001	Quantitative (survey)	Canada	Community pharmacists
Saini et al.*	2006	Mixed methods (survey comprising qualitative and quantitative items)	Australia	Community pharmacists
Armour et al.*	2007	Qualitative (focus groups)	Australia	Community pharmacists
Peterson et al.*	2009	Quantitative (survey)	Australia	Pharmacists working in all sectors
Cvijovic et al.	2010	Qualitative (case study research using semi-structured interviews)	Canada	Community pharmacists
Carr et al.*	2011	Quantitative (survey)	USA	Community pharmacists
Perrault et al.*	2012	Quantitative (survey)	Canada	Hospital pharmacists
Kanjanarach et al.*	2012	Quantitative (survey)	Thailand	Hospital pharmacists

Table 3 continued

Study authors	Year of publication	Methodological approach	Country research conducted	Study participants
Hebert et al.*	2013	Quantitative (survey)	Canada	Community pharmacists
Elkassem et al.*	2013	Quantitative (survey)	Qatar	Hospital pharmacists [^]
Awaisu et al.*	2014	Quantitative (survey)	Qatar	Hospital pharmacists
Lowrie et al.	2015	Qualitative (semi-structured interviews)	UK (Scotland)	Pharmacists working in GP practices and hospital pharmacists
Stewart et al.	2015	Quantitative (survey)	Qatar	Hospital pharmacists

* studies included in the systematic review published in 2015 (Awaisu, Alsalimy 2015).

[^] study participants comprised both pharmacists and non-pharmacists (43 participants were pharmacists and 4 were non-pharmacists i.e. 2 physicians, 1 pharmacy technician and 1 podiatrist). Data from all 47 participants were included in the data analysis.

In summary, the primary research studies identified for inclusion in the literature review were conducted in six different countries but predominantly in the UK, Australia and Canada. While most of the studies involved community pharmacists, seven were undertaken with hospital pharmacists (although some of these also included pharmacists from other sectors of practice). In terms of research methodologies used, of the eighteen primary research studies identified, thirteen utilised quantitative methodology, three used qualitative methodologies, and two employed mixed methods. The systematic review was based on 15 of the primary research studies included in this literature review (the studies included in the systematic review are highlighted in Table 3 above). The studies identified varied in their objectives. While several explored pharmacists' interest or willingness to be involved, others looked at

their attitudes towards research. Some specifically explored pharmacists' attitudes in relation to barriers and facilitators while others included pharmacists' motivation to participate in research in their objectives. Others reported pharmacists' self-perceived confidence and competence and some looked at levels of involvement among participants. The literature review below is presented in terms of these objectives.

Interest and willingness to be involved in research

Levels of interest in research involvement were explored as part of the systematic review and the authors reported levels to vary from 28% to 83% of surveyed participants (Awaisu, Alsalmiyah 2015). However, of the more recent studies included in the systematic review conducted with hospital pharmacists, the reported levels of interest in research were towards the higher end of this range (Elkassab et al. 2013, Kanjanarach et al. 2012, Perreault et al. 2012, Awaisu et al. 2015). Two of the studies included in the systematic review assessed community pharmacists' interest in practice-based research networks (collaborations to support the undertaking of research) and both reported interest levels to be high (Hébert et al. 2013, Carr et al. 2011). However, as these studies assessed pharmacists' interest in participating in these networks they did not necessarily assess pharmacists' interest in undertaking research themselves. One study compared levels of interest between those with previous research experience and those without (Saini et al. 2006). The authors reported levels of interest in future research involvement to be higher amongst those with research experience compared to those without (77% of respondents with previous experience expressed interest in future research involvement compared to 34% of respondents without prior experience). However, the study explored participants' levels of interest relating to their community pharmacy being involved in future research, and it is therefore unclear whether these findings could be extrapolated to their personal interest in undertaking research.

Attitudes towards research

The systematic review published in 2015 concluded that pharmacists had positive attitudes towards participating in pharmacy practice research, and that overall pharmacists agreed that conducting research was important (Awaisu, Alsalimy 2015). Reasons cited for why pharmacists perceived research to be important included research being a professional responsibility, as well as the development of the profession and career progression. The authors also reported that pharmacists recognised the importance of research to support evidence-based practice and improve the quality of patient care and outcomes.

Papers published since the systematic review have also reported positive attitudes towards research among pharmacists. For example, Stewart et al. (2015) reported that respondents in their study generally held positive attitudes towards research. Likewise, Lowrie et al. (2015) reported similar positive attitudes towards research, reporting participants to have expressed an understanding of the relevance, importance and value of research within pharmacy practice. They also reported that, in line with the systematic review, participants acknowledged the importance of research to professional standing and potential for contribution to patient care.

Barriers and facilitators to research

Several studies reported findings relating to barrier and facilitators to pharmacists undertaking research.

In relation to barriers, according to the authors of the systematic review those most commonly reported were lack of time and workload, insufficient or lack of funding, and lack of research knowledge, training, mentorship and support (Awaisu, Alsalimy 2015). Other barriers reported in the literature included lack of confidence (Awaisu et al. 2015, Armour et al. 2007, Lowrie et al. 2015), lack of knowledge in relation to accessing support (Liddell 1996), lack of

awareness of opportunities or not being approached (Peterson et al. 2009), and organisational culture (Stewart et al. 2015, Lowrie et al. 2015).

Presumably as a result of using a qualitative methodology, Lowrie et al. (2015) reported barriers to engagement not cited elsewhere in the literature. They reported lack of managerial support and prioritisation of immediate core daily clinical activities to be frequently cited as barriers. They also reported a perception of research being risky, citing there to be *'little desire to gamble' on research that may result in negative outcomes'* (p.4) among participants. Lack of extrinsic reward in relation to career progression was reported as another barrier to engagement, with the authors citing research to be perceived to involve *'substantial personal cost for limited personal gain'* (p.4). Fear of undertaking research was also cited to being an underlying fear of failure through research ideas being dismissed and a fear of the unknown. Interestingly, the authors also looked at the barriers reported by those they described as 'currently' and 'not currently' undertaking research and found more contextual barriers to be reported by those not undertaking research than those who were. The authors concluded from this that these findings suggested that *'perceived contextual barriers are outweighing the personal elements to participate in research'* (p.10).

Some studies also provided more context or insight regarding some of the barriers identified previously in the literature. For example, regarding lack of time being a barrier, the authors of a case study suggested that although lack of time was frequently cited as the main barrier to participation, this was a *'socially acceptable excuse'* offered by participants (Cvijovic et al. 2010). The study was conducted in Canada and explored community pharmacists' perceptions of their participation in a particular research project for which they had undertaken data collection. Rather than lack of time being a barrier to research participation, the authors instead suggested that the barrier to research participation to be a perceived lack of value associated with collecting research data among their participants because the time taken to

collect the data was minimal and participants reported competing demands taking priority over data collection. However, as the study related to participant's views and experiences of undertaking one particular study, the extent to which the findings relate to pharmacists' views of undertaking research in general is unclear. More relevant is perhaps the findings of the research undertaken by Lowrie et al. (2015). They too found lack of time to be viewed as the main barrier to research but, like the authors of the Canadian case study, suggested that this '*served to mask*' other factors such as prioritisation of clinical services and fear associated with undertaking research. However, they also reported that a limited number of participants in their study had changed their working practices to enable them to undertake research. Examples cited included individuals using their annual leave to undertake research or compressing their working hours to enable them to have time in the working week to undertake research. I would suggest that individuals changing their working practices to accommodate research activity goes some way to supporting the notion that lack of time in the working day is a barrier to research engagement rather than lack of time masking other barriers as suggested by the authors. Indeed, Lowrie et al. (2015) also suggested there to be a tacit acceptance among participants that to undertake research they would need to do this in their own time, again suggesting lack of time to be a 'real' barrier to research engagement. In relation to lack of competence being an impediment to engagement, Lowrie et al. (2015) suggested that, given most of the NHS pharmacists interviewed in their research had undertaken or were undertaking research as part of a postgraduate qualification which incorporated a research component, the learning undertaken as part of such qualifications does not equip pharmacists to undertake subsequent research in the workplace.

Few papers specifically looked at facilitators to engagement. A qualitative study undertaken in Australia with community pharmacies looked at pharmacists' views relating to strategies to overcome barriers to research involvement (Armour et al. 2007). The strategies identified included students conducting research in pharmacies, pharmacy research awareness

programmes, research training for pharmacy staff, and more encouragement to undertake research training. Although the study did not cite these as facilitators to research, by their very nature strategies to overcome barriers or ensure individuals are not prevented from undertaking research represent facilitators. The only other study to look at facilitators was a further qualitative study undertaken more recently in the UK by Lowrie et al. (2015) which identified what they described as 'perceived barriers and supports' to research. Included in their findings were access to support, protected time to undertake research, job roles which oversee research activity and incentivising research by linking it to career progression. Additional funding to ensure continuity of delivery of existing roles through backfill arrangements was also identified in the context of protected time facilitating engagement. They also reported lack of time and prioritisation to be less of a problem when research was undertaken within the context of a postgraduate qualification. From this they suggested that postgraduate qualifications were an enabler to engagement in terms of allowing pharmacists protected time to undertake research. Research networks and peer support, as well as the idea of a centralised research support facility, were also suggested as ways to provide pharmacists with support. In addition, management support was seen as a necessary prerequisite to research involvement. Although not cited as a facilitator to engagement per se, the authors of the systematic review published in 2015 advocated the creation of practice-based research networks between academia and practice as a way to augment participation in research by promoting research culture and mentorship among pharmacists (Awaisu, Alsalmiyah 2015).

Motivating factors to undertake research

Three main themes were identified from the systematic review: personal interest in a particular research project; belief in the importance of research and its impact on patients' health; and the desire to improve the profession (Awaisu, Alsalmiyah 2015). Although not mentioned in the systematic review, increasing job satisfaction appeared to be cited as

another motivating factor in one study (Carr et al. 2011), and two studies reported the opportunity to learn more about disease management to be another factor that would encourage pharmacists to participate in research (Simpson et al. 2001, Peterson et al. 2009). Two further studies identified financial reward or incentives as motivating factors (Rosenbloom et al. 2000, Peterson et al. 2009). However, contradictory findings from other studies did not suggest involvement to be facilitated by financial incentives (Armour et al. 2007, Krska et al. 1998, Saini et al. 2006).

In terms of motivating factors identified in research published since the systematic review, Lowrie et al. (2015) reported individual motives for engaging in research which they categorised as personal and external rewards. External rewards included potential benefits to the service or interest in the research area whereas personal rewards were limited to gaining a postgraduate qualification. The authors suggested explicit inclusion of research in NHS employee pharmacists' job roles, personal development and appraisal as ways to encourage research activity as well as linking research to career progression. Interestingly, the authors reported that participants did not make reference to any external drivers to participation and that, rather than their job role or other external incentive driving them to undertake research, *'those who had managed to incorporate research into their job roles had drawn on their internal drive to conduct research'* (p.11).

Confidence and competence to undertake research

Only one study conducted among hospital pharmacists in Qatar stated determination of pharmacists' self-reported competence and confidence to undertake research to be a primary objective of their research (Awaisu et al. 2015). The authors found at least 20% of respondents reported themselves as having inadequate competence and/or confidence in several aspects of the research process, including developing research protocols, critically appraising the literature, conducting statistical analysis, and interpreting study findings.

Other studies have also explored participants' self-perceived competence and confidence to undertake research. In terms of competence, the authors of one study reported that only 51.9% of participants in their study considered themselves to be adequately trained to conduct research (Perreault et al. 2012) and likewise the authors of another reported that most participants in their research perceived themselves to lack some of the skills and/or knowledge to carry out research (Armour et al. 2007). One study, which also reported that several participants did not perceive themselves as having the required skills to enable them to participate in research, cited research design, ethical guidance, statistics and scientific writing cited as areas where participants felt they needed support (Lowrie et al. 2015).

In relation to confidence, one study reported pharmacists to lack confidence in their knowledge to undertake research (Kanjanaarach et al. 2012) , and, as referred to in section 0, two further studies reported lack of confidence to be a barrier to research (Armour et al. 2007, Lowrie et al. 2015). On the other hand, the authors of one study reported that 95.7% of participants in their research felt confident to undertake research but only 34% agreed they had received sufficient training to undertake pharmacy practice research suggesting that, despite them feeling confident to undertake research, participants felt they lacked competence (Elkasssem et al. 2013). Similarly, the authors of another study reported that 40.8% of participants in their research agreed with the statement 'I would require supervision to do research' suggesting that either participants lacked confidence or perceived themselves to lack competence to undertake research (Rosenbloom et al. 2000).

Research involvement

The systematic review published in 2015 concluded that between 6% and 50% of surveyed pharmacists reported previous involvement in research and that research involvement was more common amongst hospital pharmacists compared to community pharmacists (Awaisu, Alsalimy 2015).

One study not included in the systematic review also explored pharmacists' involvement in research, and reported 37% of participants to be involved in research at the time of the interviews taking place, and a further 54% of participants to have previous research experience but not involved in research at the time of the interviews (Lowrie et al. 2015). In addition, the authors reported that the majority of participants who had either previously undertaken or were undertaking research had done so in part-fulfilment of a work-based postgraduate qualification. They also reported that those with a postgraduate qualification were more likely to be involved in research as were those with increasing numbers of years of postgraduate experience.

3.3 Relevance of the published literature to the initial study

Previous studies have mainly sought the attitudes and opinions of community pharmacists, rather than those employed in the hospital sector. This is perhaps not surprising given it has been reported that 55% of pharmacists worldwide work in the community sector compared to just 18% in hospitals (International Pharmaceutical Federation 2012). Indeed, of the eighteen primary research studies reviewed, ten related solely to community pharmacists (Liddell 1996, Krska et al. 1998, Rosenbloom et al. 2000, Saini et al. 2006, Simpson et al. 2001, Armour et al. 2007, Cvijovic et al. 2010, Carr et al. 2011, Hébert et al. 2013, Ellerby et al. 1993) of which six were not only undertaken with community pharmacists but also conducted outside of the UK (Armour et al. 2007, Cvijovic et al. 2010, Carr et al. 2011, Saini et al. 2006, Hébert et al. 2013). As practice varies between countries and sectors, the relevance of the findings of these studies to this study is unclear. The findings of the four studies undertaken with community pharmacists in the UK would arguably be more applicable but these studies were all undertaken some time ago (Ellerby et al. 1993, Krska et al. 1998, Liddell 1996, Rosenbloom et al. 2000). Three were published in the 1990s (Ellerby et al. 1993, Krska et al. 1998, Liddell 1996) and even the most recent was published twenty years ago (Rosenbloom et al. 2000). As

pharmacy practice has evolved significantly in the last few decades (as outlined in earlier in section 2.4), the extent to which the findings of even these studies can be applied to current pharmacy practice in the UK is difficult to determine.

Of the studies undertaken involving hospital pharmacists, the majority of these were also undertaken outside the UK in Canada (Perreault et al. 2012), Qatar (Awaisu et al. 2015, Elkassem et al. 2013, Stewart et al. 2015), Thailand (Kanjanaarach et al. 2012) and Australia (Peterson et al. 2009). Despite these studies having involved hospital pharmacists, because they were undertaken outside of the UK and because practice varies between countries, the extent to which their findings can be applied or extended to UK practice is also unclear. Certainly, the authors of one study undertaken in Qatar recognised that research was not mandated for hospital pharmacists there, and contrasted that to the UK where a requirement to undertake research is specified under NHS Agenda for Change (Awaisu et al. 2015).

Of the studies conducted in the UK with hospital pharmacists, one was undertaken some time ago in 1993 in the South East Thames region which used a survey and structured interviews to assess the level of commitment and opinions of clinical trainers and pharmacy service managers to pharmacy practice research within hospitals (Davies et al. 1993). Lack of time and funding, together with insufficient experience, were identified as the main barriers to research. However, the validity of the study findings as representative of current opinions is difficult to determine as, like the community pharmacy studies undertaken in the UK, the research was undertaken over 25 years ago and in the intervening period pharmacy practice has changed. A second study involving UK hospital pharmacists was undertaken in Scotland in Greater Glasgow and Clyde Health Authority and is a more recent publication (Lowrie et al. 2015). The study explored pharmacists' perceptions and experiences of pharmacy-led research in the workplace and involved 54 semi-structured face-to-face interviews with pharmacists working in primary care and hospitals in varying roles, numbers of years qualified, levels of

seniority and experience in research. The authors concluded that *'most pharmacists realised the desirability and necessity of research to underpin pharmacy service expansion'* (p.1). They also reported the lack of research in pharmacy culture to be a combination of contextual barriers and more individual elements but, as cited earlier in the previous section, they also suggested that perceived contextual barriers to be outweighing personal elements to participate in research. The authors therefore suggested *'a combination of individual and profession level changes is needed to increase activity'* (p.1) including changes at organisational level to offer practical, accessible support to individuals. However, the relevance of these study findings to hospital pharmacists working in the NHS in England may be limited because firstly, although the study was conducted with hospital pharmacists, primary care pharmacists also participated and differentiation was not made between the groups in the reporting of the findings, and secondly because the structure of the NHS in Scotland differs from that in England in that the Scottish healthcare system is more integrated (NHS Scotland 2016).

To summarise, the relevance of previous research findings to UK hospital pharmacists' attitudes and opinions towards research is limited, not only because the majority of studies involved community pharmacists but also because, of those undertaken with hospital pharmacists, the majority have been conducted outside the UK. Even the relevance of the findings of the studies undertaken with hospital pharmacists in the UK is potentially limited due to either the time elapsed since the research was published or because of differences between the English and Scottish healthcare systems.

3.4 Summary

Having reviewed the relevant published literature, a paucity of research relating to the attitudes and opinions of hospital pharmacists in the UK to undertaking research was identified. There is therefore a need to explore the attitudes and opinions of pharmacists

working in this sector in the UK to better understand how to increase their engagement with research.

A précis of the initial study is presented in the next chapter.

4 Initial study

As outlined in chapter 1, the initial study took the form of a feasibility study for the main research study undertaken in part 2 of the DPharm programme. This comprised semi-structured interviews with chief pharmacists of six acute secondary care NHS Trusts in the West Midlands to explore their attitudes and opinions towards hospital pharmacists undertaking research. In this chapter I outline the study aims and methodology used to conduct the research as well as summarise and discuss the findings in relation to the literature reviewed in the previous chapter. However, as the study took the form of a feasibility study, learning from the initial study related to the appropriateness of the methodology for the main research study, together with any findings which informed the research design for the main study, are also presented later in the chapter, in section 4.4.

4.1 Study aims

The initial study aims were as follows:

- To explore the attitudes and perceptions of chief pharmacists towards hospital pharmacists undertaking research
- To establish the appropriateness of the methodology for exploring the phenomenon of interest and inform the research design for the main research study undertaken in part 2 of the DPharm programme

4.2 Methods

The initial study was exploratory in nature. Undertaking a study of this type was appropriate for this element of the research as a lack of published studies relating to the phenomenon of interest i.e. UK hospital pharmacists' attitudes and opinions towards research had been identified from the initial study literature review. Exploratory studies are cited in the literature as being useful '*when not enough is known about a phenomenon*' (p.36) (Gray 2014). To

undertake exploratory studies, qualitative methodologies are commonly employed (Smith 2010). A qualitative methodology was used in this initial study as semi-structured interviews were conducted allowing the subject to be investigated from the perspectives of participants (Snape, Spencer 2003).

Chief pharmacists were chosen to be participants as I believed, as a professional group, they would have a broader view of the barriers and enablers to research activity as well as a greater insight into the political context within their organisations and the wider profession compared to less senior pharmacists. I felt that scoping their attitudes and opinions for my initial study would therefore help inform the study design for my main research study in part 2.

Semi-structured interviews were chosen to allow flexibility in the conduct of the interviews and thereby enable the collection of rich data (Bryman 2012). Semi-structured interviews were chosen in preference to focus groups for two reasons - firstly, in group situations it can be harder to probe for details (Fitzpatrick, Boulton 1996), and secondly, due to the wide geographical spread of participants, a focus group would have been difficult to arrange. Interviews were undertaken face-to-face as opposed to by telephone to help build rapport and therefore obtain more detailed and considered responses (Smith 2010).

Six chief pharmacists were interviewed. This sample size was selected because this was the maximum number of interviews that could have been conducted in the timeframe allocated to undertaking the initial study in the DPharm programme at Keele University. As the purpose of this element of the research was a feasibility study i.e. undertaken to establish if the research design and methodology were appropriate to inform the main research study undertaken in part 2 of the DPharm programme, achieving data saturation was not necessary. Conducting six interviews was therefore sufficient for this element of the research.

To identify participants, a purposive convenience sampling strategy was used (Bowling 2014). The sampling strategy was purposive as the aim was to achieve a ratio of chief pharmacists from mental health Trusts to acute Trusts roughly proportional to the ratio of mental health Trusts to acute Trusts in the region. To achieve this, four of the six chief pharmacists who participated represented acute secondary care NHS Trusts and two represented mental health Trusts. It was also a convenience strategy because the chief pharmacists who were approached to participate were those with whom I already had established working relationships and who were believed therefore to be most likely to take part. To recruit participants, I telephoned all potential participants to invite them to take part, and all agreed to take part. During the calls, prospective participants were given an outline of what taking part in the research would entail. To ensure they were able to make an informed decision regarding participation in the study, all potential participants were emailed a copy of the participant information sheet in advance of the interviews taking place, and, before being interviewed, were required to give their written consent to participate by way of completing and signing a consent form. For copies of the participant information sheet and consent form, refer to appendices 3 and 4 respectively. Ethics approval was sought before any contact was made with prospective participants.

To provide a framework for the interviews an interview guide was developed based on the objectives of the studies included in the initial study literature review. All interviews were undertaken at participants' workplaces and were transcribed verbatim. Refer to appendix 5 for a copy of the interview guide.

To analyse the data framework analysis was used to identify themes from the interview transcripts (Ritchie, Spencer 1994). For further details of how the data was analysed using this analytical approach refer to section 8.1.4). NVivo (a software programme designed for

qualitative analysis) was used to help with data management (Richards 1999). Anonymised short quotes are used to illustrate findings.

Ethics approval for the study was obtained from Keele University School of Pharmacy Ethics Committee (see appendix 6 for a copy of the ethics approval letter). However, NHS Permission was not required despite NHS staff being involved due to the study being a feasibility study (i.e. undertaken to establish the appropriateness of the research design and methodology) and therefore not considered to be research according to the HRA decision tool (HRA 2015).

In the next section, the findings of the initial study in relation to the attitudes and opinions of the chief pharmacists who participated are presented and later discussed in the context of the published literature.

4.3 Attitudes and opinions towards hospital pharmacists undertaking research

4.3.1 Findings

Four key themes were identified relating to participants' attitudes and perceptions towards hospital pharmacists undertaking research were identified: involvement, drivers, barriers, and enablers. A summary of the findings relating to each of these four key themes are presented below.

Involvement

Only two of the chief pharmacists interviewed described pharmacists in their respective organisations to be undertaking research. Both were acute Trusts and at both pharmacists undertaking research were doing so as part of post-graduate qualifications. No pharmacists at any of the Trusts represented by the chief pharmacists who participated were undertaking research outside of postgraduate qualifications. Two of the chief pharmacists had themselves undertaken research but there did not appear to be any correlation between chief

pharmacists' previous research experience and research activity within their departments. While pharmacists were not undertaking research at all Trusts, all chief pharmacists who participated unequivocally recognised the importance of pharmacists undertaking research.

12: '...pharmacy, certainly hospital pharmacy, really should be doing research.'

However, only one saw it as their duty to encourage research activity and lead by example though undertaking research themselves.

When asked how pharmacists could be involved in research, participants talked about pharmacists leading and developing practice-based research. Participants also made reference to multidisciplinary collaborations which included pharmacists contributing to or supporting research led by other disciplines and, likewise, other disciplines supporting the delivery of pharmacy-led research.

13: 'I think pharmacists can do everything from leading, developing, you know, every aspect of that research and supporting others in doing that..'

One also talked specifically about pharmacists being involved in designing protocols for Trust-sponsored clinical trials. I would argue these all to be examples of pharmacists being involved in undertaking research. However, some also talked about pharmacists' involvement in the management of clinical trials medicines which, although related to research in the widest sense, is a supply function, and, I would argue is therefore not an example of pharmacists undertaking research themselves. The potential for confusion between managing clinical trials medicines and other types of research-related activities constituting research involvement was therefore identified.

Throughout the course of the interviews some confusion among participants regarding different types of scientific inquiry also became apparent. Some perceived audit and service evaluation to be research whereas others distinguished between research and service

evaluation and/or audit. Several also appeared to associate publishing work, either as journal publications, conference presentations or posters, as being synonymous with research when in reality such publications can be used to report any type of scientific inquiry.

Drivers

Chief pharmacists' perceptions of the drivers for pharmacists to undertake research fell into two broad categories: those related to the individual i.e. personal drivers and those related to the organisation or the wider profession i.e. external drivers.

Professional development, career progression, obtaining a qualification, kudos and personal interest were cited as personal drivers to pharmacists undertaking research. Career progression being a driver was not a universally shared view. Several were of the opinion that research was not required for career progression within the NHS, but, where it was viewed as an enabler to career progression, it was the qualification gained as a result of undertaking the research that was frequently cited as enabling career progression rather than involvement in research itself. In terms of personal kudos, some gave the impression that the kudos associated with research qualifications was less about the academic achievement and skills gained from undertaking research but more about attaining a personal accolade, as illustrated by the following quote:

I2: 'It's kudos isn't it, that's why we do it, we like to have doctor before our name..'

Gaining a postgraduate qualification therefore seemed to be more of a driver for research engagement than the process of undertaking research itself.

In the context of external drivers, improving services for patient benefit was ubiquitously cited. When talking about research in the context of improving services, several participants described themselves as having a 'gatekeeper' function in terms of ensuring that research undertaken in their department was aligned to departmental priorities. Research activity being

associated with a good reputation of both the department and the Trust was also cited with a suggestion that such a reputation could facilitate staff recruitment.

I6: 'I think a positive profile, recruitment and retention, you know you can use it all for the positive things of trying to encourage people to join you because we've got a high profile 'we're doing this research'.'

Organisational culture was also identified as a driver, and several chief pharmacists recognised the influence of their leadership on the culture of their respective departments.

I2: '...if the chief pharmacist or the leaders of the pharmacy service are not recognising that and not pushing pharmacy forward to do research, then it's not going to happen.'

At an organisational level, one participant talked about their Trust vision and associated research strategy being a driver for their department to engage in research. However, another had a different opinion. Instead of their organisation being the driver for their department to be research active, they talked about research engagement within their department being their personal ambition. It was at these Trusts, where research strategies were in place, whether departmental or Trust-wide, where chief pharmacists appeared to be driving research or were taking steps towards this. Others, by comparison, appeared almost ambivalent and, consequently, the personal motivation of individuals employed in their departments to undertake research appeared to be a more significant driver than the contextual domain. Organisational culture, whether Trust-wide or departmental, was therefore recognised as being a potential driver. When asked about the inclusion of research in pharmacists' job descriptions, the majority reported that it was, but when asked about the inclusion of research in staff appraisal only one said it was included in the appraisals of pharmacists at their Trust, and even then it was only included in the appraisals of those already undertaking research.

Barriers

Chief pharmacists' perceptions of the barriers to hospital pharmacists undertaking research fell into three key categories: resource, mindset and culture.

In terms of barriers relating to resource, lack of time was cited as the largest barrier to undertaking research but this was mainly in the context of the competing priorities of 'core duties'. Lack of time, therefore, appeared to be a barrier not only to research but to any activity not associated with the core pharmacy service. Lack of funding to release staff time to undertake research was also identified as a barrier, as was lack of available expertise to support research. Even chief pharmacists of Trusts where pharmacists were undertaking research expressed concern about the robustness of their internal mentoring arrangements, recognising that research expertise within their departments was limited. Although participants appeared to be aware that postgraduate research qualifications provided training in research methodology, they talked about a lack of available training and formalised support from universities as being barriers to research for those wanting to undertake research outside of such qualifications. There appeared to be a desire therefore for training and support to be available for pharmacists to undertake research outside of postgraduate qualifications. On the subject of accessing research expertise, chief pharmacists who participated were aware of the research expertise within academia but viewed the lack of engagement between universities and Trusts as a barrier to pharmacists undertaking research. Illustrating this, several talked about a divide or separation between academia and practising pharmacists, and appeared, therefore, to view the relationship between academia and practice as 'them and us'. Participants also talked generally about a lack of support for pharmacists to undertake research. Interestingly, some did not appear to believe that support should be coming from themselves or others within the department but instead implied that it should be coming from a source external to their organisation such as a professional body perhaps.

In relation to mindset, chief pharmacists identified lack of confidence and a perceived lack of competence across the profession as barriers. One participant illustrated this by comparing the mind-set of pharmacists with that of junior medics:

I1: 'Because I think sometimes, strangely as a profession, we do lack confidence. We...we you know, we do...we do...so a...a junior medic might go up and sort of say, oh, you know, I want to do a piece of research; I want to do this. And actually, pharmacists are more reticent about doing that.'

Research being perceived as complex to undertake was cited as a barrier with several suggesting that the prospect of undertaking research might even be something that pharmacists feared or perceived to be impossible.

I1: '...people see research as something off in the ether that is way, way complicated and undoable.'

To counter this many believed that there was latent potential within the profession, their perception being that pharmacists had the level of skill required to undertake research but their lack of knowledge of research methodologies acted as a barrier to engagement. Several participants also suggested pharmacists perceived research to be 'risky' to undertake which they believed would present a barrier as they perceived pharmacists to be generally risk averse and conservative. Reasons suggested why pharmacists perceived research to be risky included pharmacists not being inclined to want to risk undertaking research which could be perceived to be of minimal or no value and the risk of negative feedback if they were to publish research that could potentially be perceived by others as controversial.

I5: '...you're going to be putting your head above the parapet once you've published something or put something out there and there may be some people who want to shoot down what you have put up there, especially if it's controversial.'

Pharmacists' mindsets being more aligned to evaluation rather than questioning and exploring was also cited as barrier as was work-life balance, indicating that some expected research to be carried out, at least in part, in pharmacists' personal time which participants believed pharmacists would be reluctant to do. Participants also suggested that pharmacists' perceptions of the substantial personal costs associated with undertaking research compared to the lack of or limited financial gain to represent another barrier.

15: 'You don't get paid any more to do it, it's often a lot of extra stress and pressure.'

Lack of awareness or appreciation of how research impacts on practice was also cited as a barrier to engagement and several reasons were suggested for this including lack of exposure to research and lack of research experience. Reference was also made to research not being part of the professional culture of pharmacists and there being a lack of awareness of the need for practice-led research among members of the profession.

The culture of the Trust or department was also identified as potential barriers to research engagement among pharmacist. In relation to the culture of the department lack of prioritisation emerged as a barrier as illustrated by some participants considering research to be something additional to pharmacists' roles rather than a core function.

13: 'I think a big chunk of it is just the time out of the core service... it's actually seen as extra to your role, rather than a key part of your role...'

Research not being embedded into the career structure of pharmacists was also perceived to be a barrier as was lack of continuity of academic study after graduation with several suggesting that the academic mindset learnt during undergraduate study was potentially being lost as pharmacists enter professional practice, as illustrated by the following quote:

11: 'It gets lost in the busy day...day-to-day mundane stuff.'

Enablers

Enablers to pharmacists undertaking research could be categorised into the same key themes as the barriers: resource, mindset and culture.

In relation to resource, participants talked about access to expertise being a facilitator to engagement, and having research-experienced pharmacists to provide mentorship to others was given as an example of how pharmacists could access such expertise. Identifying a pharmacist within the department with research expertise to provide leadership and support to others undertaking research was also cited in the same context.

I6: 'I pay [name of the pharmacist leading on research] a day a week to look at and lead on practice research.'

Undertaking postgraduate research qualifications was also recognised as not only offering pharmacists access to training in research methodology, but also through the course of undertaking the qualification, providing them with mentorship and support to carry out research. Participants also talked about closer collaborations between universities and Trusts being another way for individuals to access research expertise with academic practice units cited as one way to achieve this. Collaborations with other Trusts to access expertise was also suggested by one participant. In the context of facilitators relating to resource, obtaining funding to enable staff to have time to undertake research and staff having protected time for research were also cited. Regarding mindset, it was suggested that pharmacists with certain personality traits or characteristics, such as being 'freethinking' and less risk-averse would be more inclined to undertake research. In relation to culture, profession-wide changes such as integrating research into the career path of pharmacists were cited as potential facilitators to engagement. One participant illustrated this by comparing the career path of pharmacists to that of medics:

I1: 'Erm maybe the medical profession have it slightly different in that they are expected to do research right from the word go, they are expected to do audit right from the word go and it's just something you are expected to fit in with your profession, your home life et cetera.'

Participants also talked about organisational culture being important in terms of engaging pharmacists with research. However, rather than viewing it as their responsibility to bring about any cultural change, participants appeared to see it as something that needed to be changed at a professional level.

4.3.2 Discussion

The initial study finding that chief pharmacists recognised the importance of research was consistent with the findings of previous studies (Awaisu, Alsalimy 2015, Awaisu et al. 2015, Liddell 1996, Lowrie et al. 2015, Perreault et al. 2012, Rosenbloom et al. 2000, Elkassem et al. 2013, Kanjanarach et al. 2012, Carr et al. 2011, Hébert et al. 2013, Krska et al. 1998). However, this apparent recognition of the importance of research did not appear to have translated into practice. Research activity across the Trusts represented by the chief pharmacists who participated in this study was low and involvement was limited to those undertaking postgraduate qualifications. Research, therefore, did not appear to be integrated into practice at any of the Trusts represented by the chief pharmacists who participated. In relation to involvement, potential for confusion in relation to activities constituting research involvement was also identified. For example, there was some confusion among participants in relation to the types of research-related activities pharmacists could be involved in which constituted undertaking research in that some perceived managing clinical trials medicines to be an example of how pharmacists could undertake research rather than an example of pharmacists supporting research delivery. Also contributing to potential confusion among the profession regarding research involvement was the apparent difficulty some participants had

distinguishing between different forms of scientific inquiry as well as a perceived association between publishing work and research.

Drivers for pharmacists to undertake research identified in the study and consistent with the systematic review published in 2015 included personal interest and the impact of research on patient outcomes although a desire to improve the profession, also identified as a motivational factor in the systematic review, was not clearly apparent (Awaisu, Alsalimy 2015). However, a driver for research activity identified in the study, but not previously reported in the literature, was an association between research activity and the reputation of the organisation. Much of the focus of the drivers, however, centred around outcomes of either the research or the research process i.e. the knowledge gained from undertaking research, attaining postgraduate qualifications or the kudos associated with being research active for the individual or organisation. Less emphasis was placed on the personal and professional development associated with undertaking research. Another observation was that those who had previously undertaken research appeared better able to appreciate these benefits. This raised the question of whether chief pharmacists who had not personally undertaken research themselves were aware of the knowledge and skills, and, to a certain extent, the mindset gained through undertaking research and the transferable nature of these skills.

Although not explicit in the data, awareness of the requirement for research to be undertaken in the NHS appeared to be lacking among participants. Also, research did not appear to be considered 'core business', as outlined the Department of Health research strategy 'Best Research for Best Health' (Department of Health 2006). Participants also seemed unaware of the requirements to undertake research as outlined in the Royal Pharmaceutical Society (RPS) practice frameworks i.e. the Foundation Pharmacy Framework (RPS 2014b) and Advanced Pharmacy Framework (RPS 2013), and RPS Professional Standards for Hospital Pharmacy Services (RPS 2014a). Lack of awareness or recognition of these national NHS and profession-

wide drivers was therefore identified as potentially going some way towards explaining the apparent disconnect between recognition of the importance of research and the integration of research into pharmacy practice. In addition, despite the NHS Agenda for Change (AfC) requirement for the inclusion of research activity in job descriptions of senior pharmacists (NHS Employers 2015), in the majority of cases this had not been translated into practice as research was not consistently reported to be included in appraisals. From the initial study findings it did not appear that AfC was driving research activity.

Consistent with the systematic review published in 2015 (Awaisu, Alsalimy 2015), lack of time and workload, insufficient or lack of funds, and lack of research knowledge, training and mentorship were all evident from the data as presenting barriers to engagement. Although lack of time was cited as a barrier, lack of time and lack of funding appeared to be closely linked. Lack of prioritisation appeared to be a more significant barrier to engagement, evidenced not only by research not appearing to be integrated into practice, but also because it did not seem to be considered a core service. These findings were consistent with those of Lowrie et al. (2015) who suggested core daily clinical activities were a barrier to research. Arguably, the findings also supported those of Cvijovic et al. (2010) who suggested that lack of time was a '*socially acceptable excuse*' whereas the barrier appeared more so to be competing priorities. Also consistent with the research undertaken by Lowrie et al. (2015) was the identification of lack of extrinsic reward in terms of career progression and associated financial gains, and work-life balance acting as barriers.

Research being perceived to be 'risky' and this presenting a barrier to engagement was also consistent with the findings of Lowrie et al. (2015) who reported there to be reluctance to undertake research that may result in negative outcomes. However, the idea of pharmacists' mindsets being more aligned to evaluation than questioning appeared to be a new theme to have emerged from the initial study data.

Perceived complexity of research, lack of confidence and perceived lack of competence to undertake research were also identified to be barriers. Again these findings were consistent with previous studies which also cited lack of confidence and competence to undertake research as being barriers to engagement (Awaisu et al. 2015, Elkassem et al. 2013, Armour et al. 2007, Lowrie et al. 2015). Lack of awareness among pharmacists of the impact of research on practice identified as a potential barrier to engagement in this study had also been reported in previous research (Armour et al. 2007, Peterson et al. 2009), as had a separation or divide between academia and practicing pharmacists posing a barrier to research (Armour et al. 2007).

In terms of facilitators to research, again similarities were evident with research undertaken by Lowrie et al. (2015). Arguably the suggestions of more formal engagement with universities, as well as collaborations with other Trusts, broadly aligned to the idea of centralised research support suggested by the authors as they reflected the need for improved access to expertise. Lowrie et al. (2015) also cited protected time, job roles that oversee research activity and linking research to career progression as other facilitators which were again similar to the findings of the initial study. The findings also aligned with the views of the authors of the systematic review who, by advocating the creation of practice-based research networks, arguably suggested more formal links with universities would facilitate engagement (Awaisu, Alsalimy 2015).

Culture was identified as a key theme in terms of both the drivers to pharmacists undertaking research and the barriers and facilitators to research engagement. Not only was the organisational culture of the Trust recognised by some participants as influencing research activity within a department, but the leadership of the chief pharmacist themselves was also recognised as having a significant influence on the culture of a department within the context of research. These influences were evident in the apparent varied reasons for some

departments being more research-active than others. At Trusts where research was being undertaken at the time the interviews were being conducted, or where there was ambition to further grow research in an already research-active department, the chief pharmacists appeared to be responding to an external driver, whether that be the motivation of individual pharmacists, or a Trust-wide research strategy. This seemingly reactive approach contrasted with a more proactive approach adopted by one chief pharmacist who personally wanted to drive research in their department. Changing the mind-set of chief pharmacists was therefore identified as a potential way to begin to alter the culture of a pharmacy department with respect to research. In terms of the literature, two studies referenced the influence of organisational culture on research activity (Lowrie et al. 2015, Peterson et al. 2009). However, both of these studies cited organisational culture as a barrier to research and suggested that a change in pharmacy culture was required to engage more pharmacists in research, whereas the findings of the initial study suggest that organisational culture could be both a barrier and a facilitator.

4.3.3 Conclusion

Overall the findings of the initial study were largely consistent with those reported in the published literature. Particularly pertinent was the similarity to the findings of Lowrie et al. (2015) as this research had been conducted in the UK, had included hospital pharmacists as participants and was published around the same time the initial study was undertaken. However, a key finding of the initial study was that both the organisational culture of the Trust and the leadership of the chief pharmacist appeared to significantly influence research activity within pharmacy departments.

4.4 Implications of the initial study for the main research study

In this section, the findings and learning from the initial study are discussed in the context of how they were used to inform the research design and methodology of the main research study undertaken in part 2 of the DPharm programme. These are presented in two parts - the first part (section 4.4.1) relates to the appropriateness of the methodology to explore the phenomenon of interest and the second part (section 4.4.2) relates to how the findings influenced the research design of the main research study.

4.4.1 Appropriateness of the methodology

From undertaking the initial study, the following points were identified in relation to the appropriateness of the methodology used in the initial study to conduct the main research study:

1. Semi-structured face-to-face interviews were an effective way to undertake an in-depth exploration of the subject with participants and were therefore an appropriate method to use to generate data for the main research study
2. The questions included in the initial study interview guide had effectively explored the phenomenon of interest and the interview guide used in the initial study was therefore broadly suitable for use in the main research study
3. Interviews took between 20 and 40 minutes to conduct and therefore more questions could be included in the interview guide and the interviews still take no longer than an hour to conduct

4.4.2 Influence of findings on research design

Organisational culture and the leadership of the chief pharmacist were identified as having a significant influence on research activity among pharmacists from the initial study. These findings led me to want to undertake research to explore further the influence of the contextual domain on research activity for the main research study. Therefore, as part of the

literature review for the main research study, a search was undertaken to identify studies relating to the influence of organisational culture and the leadership of the chief pharmacist on research activity among pharmacists.

Support for research activity in terms of individuals being able to access expertise was also identified as potentially facilitating engagement, with academic practice units and individuals in research leadership roles cited as examples of how individuals might access such support within their department. I was therefore interested in how pharmacists in research active organisations were supported to undertake research. Consequently, as part of the literature review for the main research study, the literature was searched for models of support for pharmacists to undertake research.

It was also apparent from interviewing chief pharmacists with and without personal research experience that those with prior experience had more insight into the factors influencing research engagement among pharmacists. For the main research study I therefore wanted to conduct my research with pharmacists who had personal research experience.

From the interviews undertaken for the initial study it was also apparent that all chief pharmacists who participated had insight regarding the culture of their organisations and the influence this had, or had the potential to have, on research activity among pharmacists. To explore the influence of organisational culture, it was therefore clear from the initial study that the views of chief pharmacists would need to be sought.

Regarding other insight gained from the initial study that had implications for the main research study, it was also apparent that participants' perceptions of the ways they believed pharmacists could be involved in research varied, as did their perceptions of the types of scientific inquiry constituting research. Some also perceived authorship of publications and conference presentations/posters to be synonymous with research. Potential for confusion in

relation to research involvement was therefore identified from the initial study, meaning there to potentially be confusion among participants in the main research study regarding their interpretation of the term 'undertaking research'. Therefore, as part of the literature review for the main research study, the published literature relating to pharmacists attitudes and opinions towards research was reviewed to identify how research involvement was defined in these studies. The purpose of this was to either identify a definition of research involvement used in the literature which could then be used in the main research study or, if such a definition was not found to exist, explore how research involvement was perceived by authors of previous studies to inform a definition to use in the main research study.

4.4.3 Summary

Undertaking the initial study therefore had implications for both the research design of the main research study and the methodology to be used. In terms of the research design, not only did I want to explore the attitudes and opinions of hospital pharmacists towards research, but I also wanted to explore the contextual conditions influencing research activity among pharmacists working in the hospital sector. The influence of the initial study findings on the research design for the main research study is discussed further in chapters 7 and 8.

In the next chapter the aims and objectives of the main research study are outlined.

From here onwards the focus of the thesis is the main research study undertaken in part 2 of the DPharm programme. The main research study is highlighted in Figure 3 below within the context of the various other elements of the research presented in the thesis.

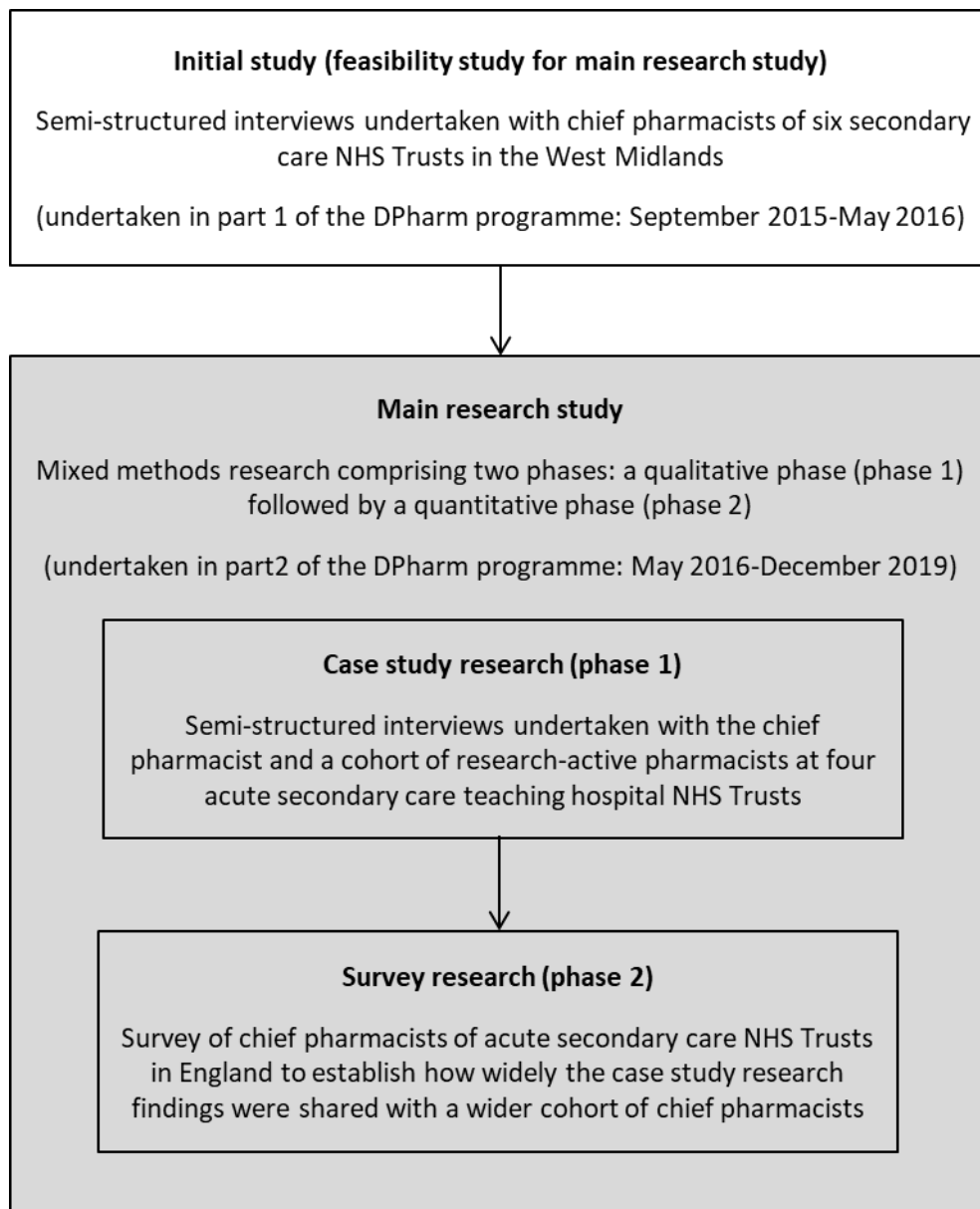


Figure 3: Flowchart highlighting the main research study

5 Main research study aims and objectives

The main research study conducted in part 2 of the DPharm was an exploration of the attitudes and opinions of hospital pharmacists towards research. In this chapter the research aims and objectives are outlined.

5.1 Research aim

The aim of the main research study was to increase understanding of the attitudes and perceptions of hospital pharmacists towards undertaking research to better understand how to engage more hospital pharmacists with research.

5.2 Research objectives

The objectives of the main research study were:

1. To explore hospital pharmacists perceptions of the drivers, drawbacks, barriers and enablers to hospital pharmacists undertaking research*
2. To investigate the characteristics of research active pharmacy departments
3. To make recommendations to potentially influence policy to engage more hospital pharmacists with research

* Although the key themes identified in the initial study were involvement, drivers, barriers and enablers, for the main research study, drivers, drawbacks, barriers and enablers were investigated for the following reasons:

- Drawbacks were explored in the main research study as participants in the initial study had identified drivers to pharmacists undertaking research, and it was felt therefore there may also be drawbacks to research engagement, drawbacks representing an antonym to drivers. A possible explanation for why participants in the initial study did not identify any

such drawbacks was that on the whole the chief pharmacists who participated were relatively research naïve and may not therefore have personally experienced drawbacks to undertaking research which may explain why drawbacks did not emerge as a theme.

- Involvement was not explored in the main research study because it was felt that as the main research project was being conducted with pharmacists who were research experienced, levels of involvement were not relevant.

6 Literature review for main research study

In this section the literature reviewed for the main research study is presented, and comprises two sections.

The first section relates to a review of the research papers relating to pharmacists' attitudes and opinions towards undertaking research published since the completion of the initial study i.e. between May 2016 and December 2019.

In the second section, a review of the literature is presented relating to the initial study findings which informed the research design of the main study. A review of the literature relating to the influence of organisational culture, the leadership of the chief pharmacist, and models of support for research activity among pharmacists employed in the hospital sector is presented, together with a summary of how research involvement is defined by the authors of the studies identified for the literature reviews relating to pharmacists attitudes and opinions towards research.

6.1 Review of literature relating to attitudes and opinions of pharmacists towards undertaking research

In this section, an account of the literature relating to pharmacists' attitudes and opinions towards research published since the initial study was completed is provided.

6.1.1 Search strategy

As outlined in section 3.1, alerts were set up at the time of the initial database searches to identify relevant research papers published following completion of the initial study. Twelve primary research papers were identified relating to pharmacists' attitudes and opinions towards research. In addition a search of the grey literature was undertaken which identified a survey of European Statements of Hospital Pharmacy undertaken in 2017 (Horák et al. 2018), referred to earlier in chapter 2. To give context as to why the survey findings were relevant to

the literature review, the European Statements of Hospital Pharmacy are commonly agreed objectives designed to assist European health systems in ensuring safe, effective and optimal use of medicines which all European health systems should aim to achieve (The European Statements of Hospital Pharmacy 2014). The purpose of the survey undertaken in 2017, and those undertaken in years previous to this, was to measure progress of the implementation of the statements and to identify the key barriers to implementing them. For the survey undertaken in 2017 one of the sections relates to education and research, and the findings were therefore relevant to this research.

6.1.2 Summary and critical analysis of the literature published since the initial study

Similar to the studies identified for the initial study literature review, the twelve primary research papers identified from the database searches were conducted in several countries and in different sectors of practice, and used various methodological approaches. Table 4 below provides a summary of the methodological approach used, the country where the research was undertaken and the area of practice to which the research pertains for each of the nine studies, listed chronologically by publication date.

Table 4: A summary of the studies included in the main research study literature review

Study authors	Year of publication	Methodological approach	Country research conducted	Study participants
Sultana et al.	2016	Quantitative (survey)	Saudi Arabia	Hospital pharmacists
Fakeye et al.	2017	Quantitative (survey)	Nigeria	Community and hospital pharmacists
Bhagavathula et al.	2017	Quantitative (survey)	Ethiopia	Community pharmacists and pharmacy technicians
Crilly et al.	2017	Mixed methods (survey followed by semi-structured interviews)	UK (England)	Community pharmacists
De Vera et al.	2018	Qualitative (semi-structured interviews)	Canada	Community pharmacists
Abubakar et al.	2018	Quantitative (survey)	Nigeria	Pharmacists working in all sectors
Lee et al.	2018	Quantitative (survey)	Canada	Hospital pharmacists
Sarwar et al.	2018	Quantitative (survey)	Pakistan	Hospital pharmacists
Shitu et al.	2019	Quantitative (survey)	Nigeria	Pharmacists working in all sectors
Zeiden et al.	2019	Quantitative (survey)	Lebanon	Community pharmacists
Kupiers et al.	2019	Quantitative (survey)	Netherlands	Community pharmacists
Stewart et al.	2018	Quantitative (survey)	UK (Scotland)	Pharmacists working in all sectors

To summarise, the studies identified were conducted in eight different countries and varied in terms of the areas of practice participants were from. Seven of the studies included hospital pharmacists as participants. In terms of research methodologies used, ten utilised quantitative survey methodology, one used mixed methods, and one employed a purely qualitative approach.

As per the literature review undertaken for the initial study, the twelve primary research studies varied in their objectives in that some looked at pharmacists' interest in or willingness to be involved in research and some their attitudes towards research. Others focused on barriers and facilitators to engagement and/or explored factors that motivated pharmacists to undertake research while others looked at involvement with research. Some studies also looked at pharmacists' self-perceived competence and confidence to undertake research. The review below is presented in terms of the study objectives listed above.

Interest and willingness to be involved in research

The findings of the research published since completion of the initial study were largely consistent with those of the systematic review published in 2015 (Awaisu, Alsalimy 2015) in that levels of interest in research were found to be high in all studies where this was explored (Sarwar et al. 2018, Crilly et al. 2017, Bhagavathula et al. 2017, Sultana et al. 2016, Abubakar et al. 2018, Stewart et al. 2019, Shitu et al. 2019, Zeidan et al. 2019). One study explored pharmacists' willingness to be involved in research and reported that a large proportion of those who responded to their survey were willing to participate in research (Sarwar et al. 2018). In line with the research undertaken by Saini et al. (2006) included in the literature review for the initial study, two studies compared interest in future research opportunities of pharmacists with previous research experience to those without, and found that pharmacists with previous research experience were more likely to be interested in future research (Sultana et al. 2016, Zeidan et al. 2019). However, unlike Saini et al. who explored levels of

interest among community pharmacists who participated in their study in relation to their pharmacy being involved in future research, these more recent studies explored interest in personally undertaking research.

Attitudes towards research

Three studies reported pharmacists to have positive attitudes or perceptions towards research (Bhagavathula et al. 2017, Sultana et al. 2016, Sarwar et al. 2018). Six explored pharmacists' attitudes towards the importance of research and, similar to the findings of the systematic review published in 2015 (Awaisu, Alsalimy 2015), reported recognition of the importance of research among participants (Bhagavathula et al. 2017, Sultana et al. 2016, Fakeye et al. 2017, Sarwar et al. 2018, Crilly et al. 2017, Zeidan et al. 2019). Their reasons were similar too. For example, career progression was cited (Bhagavathula et al. 2017) as was research being a professional duty or recognised as being part of pharmacy practice (Bhagavathula et al. 2017, Sultana et al. 2016, Fakeye et al. 2017) and recognition of the importance of research in relation to improving practice and patient care (Sultana et al. 2016, Fakeye et al. 2017, Sarwar et al. 2018). Two further studies also reported there to be recognition among participants of research being part of professional practice i.e. one study reported the majority of participants to believe research to be a professional duty (Shitu et al. 2019), and another reported that the majority of participants in their study agreed research should be part of daily practice (Kuipers et al. 2019).

Barriers and facilitators to research

Findings relating to barriers to research involvement were similar to those identified from the initial study literature review. Lack of time was again identified as a common barrier to engagement (Abubakar et al. 2018, Crilly et al. 2017, De Vera et al. 2018, Lee et al. 2018, Shitu et al. 2019, Zeidan et al. 2019, Sultana et al. 2016, Kuipers et al. 2019). Other barriers reported included lack of funding, (Zeidan et al. 2019, Fakeye et al. 2017, Abubakar et al. 2018),

difficulty obtaining funding (Shitu et al. 2019), lack of remuneration (Crilly et al. 2017), inadequate knowledge (Abubakar et al. 2018, Crilly et al. 2017, Fakeye et al. 2017, Sarwar et al. 2018), insufficient training (Crilly et al. 2017, Bhagavathula et al. 2017), lack of awareness of the opportunities to be involved in research (Sarwar et al. 2018, Sultana et al. 2016), not being approached or asked to take part (Sultana et al. 2016, Sarwar et al. 2018, Crilly et al. 2017), and competing workload priorities (Lee et al. 2018). Several studies also reported lack of managerial support as a barrier to engagement (Abubakar et al. 2018, Crilly et al. 2017, Sarwar et al. 2018). Lack of incentives was also identified as a barrier in one study (Sarwar et al. 2018). As outlined above in section 6.1.1, the 2017 European Statements of Hospital Pharmacy Statements Survey explored barriers to pharmacists publishing pharmacy practice research (Horák et al. 2018). Lack of capacity was identified as the most frequent barrier reported, followed by lack of capability and publishing research not being considered a priority by management.

In relation to lack of time being reported as a barrier to research, several study authors appeared to use their study findings to challenge this. For example, Fakeye et al. (2017) reported that time constraints were not found to be a barrier to research in their study, and suggested that this *'perhaps implies that once there is interest and willingness in research, lack of time should not be a hindrance to conduct PPBR [pharmacy practice-based research]'* (P.8). Likewise, Sultana et al. (2016) reported that although lack of time was identified as a barrier in their study, participants were willing to make time to undertake research during working hours. Crilly et al. (2017) too reported very similar findings in that they also reported pharmacists would be willing to make time to undertake research during the working day, and Kuipers et al. (Kuipers et al. 2019) reported a little over half of participants in their study (51.6%) would be willing to find time to participate in pharmacy practice research. Lastly, Abubakar et al. (2018) suggested their findings were inconsistent with those previously reported in the literature in that they identified lack of funding to be the biggest barrier to

research, rather than lack of time. However, I would argue funding and time are interlinked issues as funding can be used to release time for individuals to undertake research. In addition, as the research undertaken by Abubakar et al. (2018) used survey methodology, these two issues could not be reliably differentiated in the study.

Several studies reported findings relating to facilitators to engagement. The authors of one study reported 69% of participants in their study felt training tools would help facilitate research and 52% thought protected time would be beneficial (Crilly et al. 2017). The authors of this study also reported that participants had suggested that if management were more supportive of research they in turn would be more likely to take part. Another study identified opportunities to join existing teams and mentorship programmes to be the most popular strategies for engaging pharmacists in future research (Lee et al. 2018). Of note, two further studies also explored facilitators to engagement (De Vera et al. 2018, Kuipers et al. 2019). However, De Vera et al. (2018) had undertaken their research with community pharmacists who had conducted a particular practice-based research study within their pharmacies, and the facilitators cited related specifically to the research activity undertaken for that particular study. For example integrating patient recruitment into the pharmacy workflow was identified as a facilitator. The facilitators were therefore focused more towards facilitating research delivery in community pharmacies rather than facilitating community pharmacists to undertake research. The applicability of the study findings to the pharmacists' attitudes and opinions towards undertaking research in general is therefore not clear. Likewise, although Kuipers et al. (2019) had explored facilitators to pharmacists undertaking research, the purpose of undertaking the research had been to provide researchers with insight on how to optimise research participation among community pharmacists. The facilitators they described therefore related to how to optimise study designs to facilitate the delivery of studies by community pharmacists, as opposed to facilitators to engage pharmacists with undertaking research.

Motivating factors to undertake research

Similar to the initial study literature review, improving patient care (Crilly et al. 2017, Fakeye et al. 2017, Sarwar et al. 2018, Sultana et al. 2016), learning more about disease management (Sultana et al. 2016, Fakeye et al. 2017, Lee et al. 2018), personal interest (Lee et al. 2018, Kuipers et al. 2019, Sultana et al. 2016) and a desire to improve the profession (Fakeye et al. 2017, Sarwar et al. 2018, Sultana et al. 2016) were all reported to be motivating factors. Two studies reported that the majority of those who took part felt research would benefit their career (Stewart et al. 2019, Bhagavathula et al. 2017) and another reported that, second to personal interest, the next most common reason for conducting research among participants in their study was that research was part of their job requirements (Lee et al. 2018). De Vera et al. (2018) also reported motivations for conducting pharmacy practice research which included a desire to contribute to research, improve care delivery, gain more knowledge and access innovation. In terms of new themes, personal satisfaction was also reported to be a motivating factor in three studies (Fakeye et al. 2017, Sarwar et al. 2018, Lee et al. 2018) although none cited any specific reasons for this being the case.

Confidence and competence to undertake research

Only one study specifically stated determination of pharmacists' self-perceived confidence and competence to undertake research to be a primary research objective (Abubakar et al. 2018). The study team reported that at least 70% of the participants in their study rated themselves as moderately to extremely competent to conduct research, meaning that up to 30% assessed themselves as not very competent or not competent at all. The authors also reported that the highest competence and confidence scores were observed for conception of research ideas, literature searching and critical appraisal, and the lowest were seen for research skills related to statistical analysis of data.

Other studies also explored pharmacists' self-assessed competency and confidence to undertake research. In relation to self-perceived confidence, one study reported more than 50% of participants showed confidence in their skills and ability to undertake research, suggesting that the rest lacked confidence (Sultana et al. 2016). On the other hand, the authors of another study reported higher levels of self-perceived confidence to undertake research, reporting that 88.2% of participants in their study perceived themselves to have confidence to conduct research (Shitu et al. 2019). With regards to competence, one study reported that 56.2% of participants in their study believed themselves to be competent to conduct research (Bhagavathula et al. 2017), and similarly another reported that in their research 60% of participants reported they had the necessary skills to do research (Crilly et al. 2017). Slightly higher levels of self-perceived competence were reported by the authors of another study who found 76.4% of participants in their research believed they had the skills to conduct research (Shitu et al. 2019). The authors of one study also explored pharmacists' self-identified strengths and weaknesses in relation to research, reporting participants' self-identified strengths to be literature evaluation and hypothesis generation, and their weakness to be statistical analysis (Lee et al. 2018).

Some studies also compared pharmacists' self-perceived competence and confidence to undertake research between those with and without previous research experience. One study reported pharmacists with previous research experience to have higher overall confidence and competence scores than those without (Abubakar et al. 2018). Similarly, another reported that pharmacists with previous research experience were more confident in their research skills, ability to read and evaluate papers and to design research studies (Sultana et al. 2016).

Involvement in research

Several studies explored levels of previous involvement in research among surveyed participants, and reported that levels of involvement ranged between 40.7% and 88% (Fakeye

et al. 2017, Crilly et al. 2017, Abubakar et al. 2018, Kuipers et al. 2019, Sultana et al. 2016, Stewart et al. 2019). In these studies, levels of previous involvement therefore appeared comparatively higher than those reported in the systematic review published in 2015 (Awaisu, Alsalmiy 2015). Similar to the systematic review, however, levels of involvement among hospital pharmacists appeared to be higher than among community pharmacists. For example, Fakeye et al. (2017) reported higher levels of involvement among hospital pharmacists (55.4%) than community pharmacists (40.75%). Sultana et al. (2016), who conducted their research with hospital pharmacists, also reported relatively high levels of previous research experience (59%) among participants in their research. In addition, Stewart et al. (2019) reported that participants in their research involved in conducting research or research dissemination were more likely to be highly qualified pharmacists in secondary care, although only 12.5% of participants reported current involvement at the time the research was undertaken.

The levels of involvement reported by Crilly et al. (2017) were, however, an exception in that they conducted their research with community pharmacists and reported high levels of previous research involvement (88%). The reported levels of research involvement, however, related to what the authors referred to as 'mandatory research', which included activities such as the community pharmacy patient questionnaire and clinical audits undertaken as part of the NHS pharmacy contract. Perhaps more relevant is the reported level of involvement in non-mandatory research, which was 29% and therefore much lower than that reported for 'mandatory research' and in line with other published work.

Interestingly, Abubakar et al. (2018), who reported the proportion of pharmacists with research experience in their study to be 79.5%, suggested that the high levels of involvement reported in their study may be due to most pharmacy schools in Nigeria having mandatory research projects for final year pharmacy students. However, Fakeye et al. (2017) also conducted their research in Nigeria, but did not make reference to final year pharmacy

student projects in their discussion regarding reported levels of involvement among their study participants. They, however, limited participation to those with five or more years post-qualification experience meaning that the final year student project may not have been perceived to be relevant.

6.1.3 Relevance of the published literature to the main research study

Having reviewed the literature relating to pharmacists' attitudes and opinions towards research published since the initial study was completed, a number of further studies were identified with generally similar findings to those published before the initial study. This is perhaps unsurprising given that ten of the twelve studies reviewed in this part of the literature review employed survey methodology, and all but Lee et al. (2018) and Kupiers et al. (2019) based their questionnaires on survey instruments used in previous studies. Therefore, the concepts explored through the surveys where the questionnaires were developed based on ones used previously would, in all likelihood, have been the same or very similar to those explored in the literature reviewed for the initial study. Therefore, similarity in the findings of the literature reviews could perhaps be expected. Findings reported in the literature reviewed for the main research study not reported in the literature reviewed for the initial study included difficulty obtaining funding presenting a barrier to engagement (Shitu et al. 2019). Other findings reported in the literature published since the initial study was undertaken that had not been previously reported included opportunities to join existing teams and mentorship programmes representing strategies for engaging more pharmacists in research (Lee et al. 2018) and research experience being a motivating factor for pharmacists to undertake research (Stewart et al. 2019, Bhagavathula et al. 2017). Research being part of pharmacists' job descriptions was also reported to be a motivating factor for pharmacists to undertake research (Lee et al. 2018) in the literature published since the initial study was conducted whereas this had only been suggested as a driver for engagement in the initial study literature review (Lowrie et al. 2015).

In terms of the relevance of the findings of the literature published since the initial study was completed to the main research study, ten of the twelve studies identified were undertaken outside the UK (Abubakar et al. 2018, Fakeye et al. 2017, Sultana et al. 2016, Bhagavathula et al. 2017, De Vera et al. 2018, Lee et al. 2018, Sarwar et al. 2018, Zeidan et al. 2019, Kuipers et al. 2019, Shitu et al. 2019). As per the analysis of the literature undertaken for the initial study, variation in practice between countries means that the applicability of research undertaken outside the UK to UK practice is difficult to determine.

The only studies undertaken in the UK were those conducted by Crilly et al. (2017) and Stewart et al. (2019). Crilly et al. (2017) conducted their research with community pharmacists in England and employed mixed methods approach which took the form of a survey followed by interviews. Although the study was undertaken with UK pharmacists, the findings are not altogether relevant to this research. Firstly because the research involved community pharmacists, whose practice varies from that of those employed in the hospital sector, and secondly because, as highlighted earlier in section 6.1.2, activities such as undertaking mandatory audits were considered to be examples of research involvement.

Stewart et al. (2019) on the other hand used survey methodology to explore the views and experiences of pharmacists on research conduct, dissemination and training among pharmacists working in all sectors across six Scottish health board areas. In terms of the relevance of their findings, although the research was conducted in the UK, I would question the applicability of the findings to pharmacists working in acute secondary care NHS Trusts in England for the same reasons I questioned the applicability of the research previously undertaken by Lowrie et al (2015), which was also conducted in Scotland. Firstly, pharmacists from all sectors participated and secondly the health system in Scotland differs to that in England. In Scotland, the health system is integrated whereas in England the health system is based on a commissioner-provider model meaning there are different organisational

structures between the nations. This in turn limits the transferability of research undertaken in Scotland to the English health system.

Therefore, no studies published since the initial study was completed appeared to have specifically explored the attitudes and opinions of hospital pharmacists in England towards research. Of those studies undertaken in the UK their relevance to this research was limited either due to the research being conducted with community pharmacists, as was the case with the research undertaken by Crilly et al. (2017), or for the research undertaken by Stewart et al. (2019), because of the differing health systems in the devolved nations.

6.1.4 Summary

Having reviewed the literature published since the initial study was completed, a paucity of studies relating to UK hospital pharmacists' attitudes and opinions towards research was found to still exist. Research to explore the attitudes and perceptions of pharmacists employed in the hospital sector in England towards undertaking research was therefore still needed to establish how to increase engagement with research among pharmacists working in this sector.

6.2 Review of literature relating to the initial study findings which informed the research design for the main research study

In this section, accounts of the literature reviews undertaken in relation to the findings of the initial study which informed the research design for the main research study are presented. Presented first is an account of the literature relating to the factors identified from the initial study as having the potential to influence research activity among pharmacists employed in the hospital sector i.e. organisational culture, the leadership of the chief pharmacist and models of support for pharmacists to undertake research. This is followed by an account of how research involvement is defined in the literature relating to pharmacists' attitudes and opinions towards undertaking research.

6.2.1 Factors pertaining to the contextual domain

In this section I provide an account of the literature reviewed relating to the influence of the factors pertaining to the contextual domain described above on research activity among pharmacists.

A literature search was undertaken to identify research papers pertaining to the influence of organisational culture, the leadership of the chief pharmacist and models of support for pharmacists undertaking research on research activity among pharmacists.

6.2.1.1 Search strategy

To identify relevant research papers, a search of the relevant databases was undertaken using similar software packages as had been used to undertake the previous literature search to identify studies pertaining to pharmacists' attitudes and opinions towards research i.e. EBSCO and Web of Science. ProQuest was not used for this literature search as the ProQuest database option used for the previous search was no longer available via Keele University. Appendix 1 provides a complete list of the databases searched using EBSCO and Web of Science. The search terms used in the database searches are listed in Table 5 below.

Table 5: Search terms used in the database searches relating to factors pertaining to the contextual domain and their influence on research activity among pharmacists

Terms to which search terms used pertained	Search terms used in database searches
Pharmacists	Pharmac*
Organisational culture	"organisational culture*"
Leadership of the chief pharmacist	Leader*
Models of support	"model* of support"
Research	Research*

Searches for all search terms were limited to title and subject/topic and all searches were limited to human studies only and those published in English. Limits to publication dates were not applied to searches. Boolean operators i.e. AND and OR were used to refine the search. For details of how the Boolean operators were used to combine and limit the search terms, refer to appendix 7. Also detailed in appendix 7 are the numbers of studies identified at each stage of the searches undertaken.

References duplicated between the databases were identified and removed, and the titles and abstracts of the remaining studies were then reviewed. However, no relevant studies were identified. The studies that were identified through the literature searches related to research undertaken to, for example, explore or measure organisational culture but not in the context of research. Likewise the references identified relating to leadership and models of support were also not relevant.

The literature search was therefore widened to identify any relevant references relating to the influence of organisational culture, leadership and models of support on research generally. The same search terms and Boolean operators were used as in the previous search, and the same limits were applied. For details of the searches refer to appendix 8. Also detailed in appendix 8, are the numbers of studies identified at each stage of the searches undertaken. References duplicated between the databases were identified and removed. For the references relating to organisational culture and research and models of support and research, the titles and abstracts of the remaining studies were then reviewed and no relevant studies were identified. For the references related to leadership and research, because of the vast number of references identified, in each database the titles and abstracts a filter was selected to list the articles in order of relevance, and the title and abstracts of the first 250 references from each database were reviewed for their relevance. Again, no relevant articles were identified.

Therefore, to explore the influence of models of support on research activity among pharmacists, the primary research papers and systematic review relating to pharmacists' attitudes and opinions towards research identified through the previous literature searches on this topic, were reviewed to identify any references to models of support for pharmacists to undertake research. The same papers were not reviewed to identify references to organisational culture and leadership as any references to these factors had been identified and included in the literature reviews pertaining to pharmacists' attitudes and opinions towards undertaking research.

6.2.1.2 Summary of references to models of support

From the review of the primary research papers and systematic review for references to models of support for pharmacists to undertake research, few references were found. As outlined in section 3.2, the authors of the systematic review published in 2015 advocated for the creation of practice-based research networks between academia and practice as a way to augment participation in research by promoting research culture and mentorship among pharmacists (Awaisu, Alsalimy 2015). Likewise Lowrie et al. (2015) suggested research networks, as well as peer support and centralised research support facilities, as ways to provide pharmacists with support to undertake research. However, these were all suggested models of support, and rather than being in existence, were therefore hypothetical models.

Regarding existing models of support, Rosenbloom et al. (2000) made reference to pharmacy Academic Practice Units (APUs) in the discussion section of their research. Although cited in the context of such units potentially addressing the perception among practitioners of academic research lacking relevance to practice, APUs were described by Rosenbloom et al. as enabling the sharing of '*skills, experiences and practices of academics and practitioners*' (p. 109). APUs therefore appeared to be perceived by the study authors to provide support to

pharmacists in practice by allowing them access to individuals with research expertise working in academia.

No further references were made in any of the studies reviewed to other specific models of support for research activity among pharmacists.

6.2.1.3 *Implications for main research study*

From reviewing the literature, no studies appear to have specifically explored the influence on research activity of organisational culture, the leadership of the chief pharmacist or models of support for pharmacists to undertake research among pharmacists in the hospital sector. The only model of support referred to in the literature was pharmacy APUs.

6.2.2 *Review of published studies in relation to how research involvement was defined*

As potential for confusion regarding research involvement was identified from the initial study, all of the research papers and grey literature identified relating to pharmacists' attitudes and opinions towards research were reviewed to identify how research involvement was defined by the authors, a summary of which can be found below.

6.2.2.1 *Summary of how research involvement was defined*

A number of definitions of research involvement were identified. For example, having publications in peer-reviewed journals and/or conference posters or abstracts appeared to be used to define research involvement of participants in some studies (Awaisu et al. 2015, Davies et al. 1993) and the 2017 survey of European Statements of Hospital Pharmacy (Horák et al. 2018). In others, research involvement encompassed experience of undertaking research-related activities e.g. recruitment of patients into studies or undertaking data collection (Saini et al. 2006, Peterson et al. 2009, Kuipers et al. 2019). In one study, research involvement among participants appeared to be related to very specific topics such as 'research on use and misuse of antibiotics' or specific research related activities for example

'collecting data using questionnaires' (Fakeye et al. 2017). In another, a combination of research activity and presentation of research findings was used to categorise participants' level of research involvement as high, moderate or minimal (Perreault et al. 2012). Rather than defining involvement by research activity or dissemination of findings, the authors of another study defined involvement in terms of the types of research in which participants were experienced and included service evaluations, clinical trials and applied health research (Crilly et al. 2017).

In other studies the definition of research involvement was not made explicit by the authors. For example, Liddell (1996) asked participants about their involvement in research projects but a definition of involvement was not provided in the published report. Similarly, Rosenbloom et al. (2000) asked participants whether they had 'initiated' or 'participated' in research but again did not provide a definition of these terms. Likewise, Kanjanarach et al. (2012) asked about 'experience in conducting research', but did not define the term. To differentiate between participants with research experience and those without, Sultana et al. (2016) based their categorisation on participants' responses to being asked 'Have you done research before?' but did not define what they meant by the term 'done research'.

Other studies simply reported previous research involvement (Stewart et al. 2019, Lee et al. 2018, Ellerby et al. 1993, Lowrie et al. 2015) or experience (Awaisu et al. 2015) among participants but provided no detail as to how this was determined. Similarly, Abubaker et al. (2018) compared attitudes and opinions of those with and without previous research experience, but did not provide a definition of what constituted previous experience although, as referred to in section 6.1.2, final year undergraduate projects appeared to be included. It is not clear from these studies whether definitions of research involvement were provided to participants in these studies, but not reported, or whether participants were not provided with such definitions.

Rather than determining levels of involvement with research among participants, some studies recruited participants based on their previous involvement with research. For example, Armour et al. (2007) recruited pharmacists with previous research involvement to participate in their research but, like the studies outlined above, the authors did not provide a definition of what constituted research involvement.

For several of the studies reviewed, participants had been recruited based on their involvement in specific multi-centre studies for which they had undertaken specified research-related activities. For example, in the research undertaken by Krska et al. (1998), participants had recruited patients into a study. Likewise, participants in the research conducted by Cvijovic et al. (2010) had screened patients and collected data for another study, whilst in the research undertaken by De Vera et al. (2018) and Simpson et al. (2001), participants had both recruited patients into studies and delivered an intervention. In these studies, research involvement related to pharmacists undertaking activities which supported research delivery i.e. recruiting patients into studies, collecting data or acting in the role of a Principal Investigator.

In summary, there was no consistency between studies as to how research involvement was defined. Some studies defined research involvement in terms of involvement in research-related activities, some by authorship of publications or conference presentations/posters, and some by types of research undertaken by participants. In addition, some authors referred to pharmacists participating in research or having experience of undertaking research, or being involved in research but offered no definition of what research involvement constituted.

6.2.2.2 Implications for main research study

There was variation evident in the literature regarding how involvement in research was defined. I therefore identified a need to define research involvement for the purposes of the main research study. As I was interested in participants' attitudes and opinions towards

pharmacists leading or collaborating in all types of research, but not pharmacists' attitudes and opinions towards supporting the delivery of research through managing clinical trials medicines, I used a definition of exclusion i.e. my definition of research involvement encompassed pharmacists either leading or collaborating in all types of research but excluded pharmacists' involvement in IMP management activity to support the delivery of clinical trials. Defining research involvement in this way aligned to the suggestion of Koshman and Blais (2011) referred to earlier chapter 2 i.e. that pharmacists' involvement in research should not be restricted to practice research.

6.3 Summary

In summary, having reviewed the literature published since the initial study was completed, there remains a paucity of studies exploring the attitudes of UK hospital pharmacists towards research. In terms of models of support for pharmacists to undertake research, the only specific model referenced in the literature was pharmacy APUs. Lastly, there was variation evident in the literature regarding how involvement in research was defined.

In the next section the methodology employed to undertake the main research study is outlined.

7 Main research study methodology

As outlined earlier in chapter 1, the main research study comprised an initial qualitative phase undertaken using case study methodology followed by a subsequent quantitative phase employing survey research.

Johnson et al. (2007) define mixed methods research as *'the type of research in which a researcher or team of researchers combines elements of qualitative and quantitative research approaches (e.g. use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) for the purposes of breadth and depth of understanding and corroboration'* (p.123).

By definition mixed methods research therefore incorporates both qualitative and quantitative approaches and, as the main research study included both a qualitative and a quantitative phase in the research design, the methodology employed to undertake this research was mixed methods.

In this chapter I outline my rationale for using a mixed methods approach, as well as my rationale for using case study research for the qualitative phase, and survey research for the quantitative phase.

7.1 Mixed methods research

7.1.1 My worldview and how it aligns to mixed methods research

Before I explain my rationale for choosing a mixed methods research design, it is perhaps useful for me to make explicit the philosophical assumptions I espouse.

Worldviews, or 'paradigms' as they are also described in the literature, are *'a basic set of beliefs that guide action'* (p.17) (Guba 1990), and my worldview aligns most closely to that of pragmatism. Based on the work of Cherryholmes (1992) and Morgan (2000), as well as his own

views, Creswell (2014) argues pragmatism is not committed to any one system of philosophy and reality. Instead it is pluralistic and oriented toward 'what works' and solutions to problems and, by encompassing both qualitative and quantitative approaches to research and the use of multiple methods of collecting data, pragmatism allows researchers freedom in their choice of approach to undertaking research. Rather than focusing on research methods, researchers with a pragmatic worldview place their emphasis on the research problem and use all approaches available to understand the problem (Rossman, Wilson 1985). Pragmatism, as a research paradigm, accepts that there can be single or multiple realities that are open to empirical inquiry (Creswell, Plano Clark 2011). Pragmatists therefore reject the philosophical dualism of objectivity and subjectivity (Biesta 2010) allowing researchers to abandon the dichotomies that are postpositivism and constructivism (Creswell, Plano Clark 2011). As a pragmatist I therefore view postpositivism and constructivism to represent opposite ends of a paradigm continuum, and where my ontological beliefs lie on that continuum for any given research project will depend on the research question. Yefimov (2004) also writes that a major underpinning of pragmatist philosophy is that knowledge and reality are based on beliefs that are socially constructed. Individuals' perceptions of the world are influenced by their social experiences, and that while each person's knowledge is unique because it is based on their experiences, nevertheless much of this knowledge is shared because it is based on social experiences (Kaushik, Walsh 2019). Therefore, having a pragmatic worldview my epistemological position is that I believe that knowledge is based on experience. By conducting interviews with

participants for the case study phase of the research to explore their attitudes and opinions towards the phenomena of interest, and similarly by conducting a survey to establish how widely the findings of the case study research were shared with a larger population, the methodological choices I made to conduct the research align to pragmatism being my worldview and this being my epistemological perspective.

I believe my worldview being aligned to pragmatism is a consequence of my professional discipline as a pharmacist and my research experience. Being a pharmacist, the research I am most familiar with is that of health research which itself is traditionally based on quantitative methodologies e.g. randomised controlled trials and questionnaire-based surveys (Smith 2010, Bowling 2014, Allsop 2013). Before embarking on the DPharm programme, the research I was familiar with was therefore predominantly undertaken in a positivist paradigm, where there is an assumption that there is an absolute truth or 'reality' and a belief that knowledge is objective and neutral (Gray 2014). However, for my initial study undertaken in part 1 of the programme, as described in section 4.2, I used a qualitative approach. By conducting interviews, the aim of the research was to explore the meaning others had about the subject under investigation meaning my worldview for this research was more aligned to constructivism, which sees truth and meaning as constructed and interpreted by individuals (Gray 2014). Through my research and professional practice I have therefore gained experience of research undertaken in contrasting paradigms using qualitative and quantitative approaches which, I believe, has led to my worldview being aligned to pragmatism.

Regarding my worldview and how it aligns with a mixed methods research design, mixed methods research is often associated with pragmatism (Creswell, Plano Clark 2011). Indeed pragmatism has been described by Burke Johnson and Onwuegbuzie (2004) as *'the philosophical partner for mixed methods research'* (p.16) and to me it is easy to see why. As stated earlier, researchers with a pragmatic worldview place their emphasis on the research problem and are free to use all available methods to address it. Similarly, by encompassing both qualitative and quantitative methodologies, mixed methods research allows researchers freedom in their choice of methods. Further, Burke Johnson and Onwuegbuzie (2004) suggest that in reference to mixed methods research *'what is most fundamental is the research question- research methods should follow research questions in a way that offers the best chance to obtain useful answers'* (p.17). Therefore, common to both pragmatism as a

worldview, and mixed methods as a research approach, is the concept of the research problem being central to the choice of research methodology.

In the next section, I explain my rationale for using mixed methods research to undertake the main research study.

7.1.2 Rationale for mixed methods research

As outlined earlier, the main research study was undertaken in two phases – an initial qualitative phase followed by a subsequent quantitative phase.

This two-phase mixed methods research design was employed to undertake the main research study because qualitative methodology was most appropriate to address the research problem and, also as the intended audience are pharmacists, the audience is more likely to be accepting of research undertaken employing a quantitative approach. More detail is provided below regarding the rationale for using a qualitative approach to address the research question, and the inclusion of a quantitative phase to make the research more acceptable to the audience.

A qualitative approach was needed to address the research problem because of the nature of the research required. As a paucity of literature had been identified from the literature reviews relating to hospital pharmacists' attitudes and opinions towards research, this meant exploratory research was needed to gain a deeper understanding of the research problem (Silverman 2013). As qualitative methodologies are considered most appropriate for this type of research (Strauss, Corbin 1990), an initial qualitative phase was included in the study design. Quantitative research was needed because one of the research objectives was to inform policy to engage more hospital pharmacists in research. The intended audience for the research was therefore pharmacists who, as referred to earlier, are more familiar with health research which is usually undertaken using quantitative methodologies. The rationale for

incorporating a second phase in the research design using a quantitative methodology was to make the research more acceptable to the intended audience.

Employing a two-phase design where a quantitative phase followed on from a qualitative phase meant the research design aligned to a recognised mixed methods design referred to in the literature as an 'exploratory sequential design' (Creswell 2014, Creswell, Plano Clark 2011). In mixed methods research undertaken using this design, data from an initial qualitative phase are used to build in to a second quantitative phase to determine in what ways and to what extent the quantitative results generalise or expand on the initial qualitative findings (Creswell, Plano Clark 2011). The methodology used for the main research study aligned to this specific design, because firstly the findings of the case study research were used to develop a questionnaire for use in survey research and secondly, the purpose of the survey research was to establish how widely the findings of the case study research were shared among a larger cohort of chief pharmacists. Interestingly, Creswell and Plano Clark (2011) suggest that the inclusion of the quantitative component in exploratory sequential mixed methods designs can make the qualitative approach '*more acceptable to quantitative-based audiences*' (p.89). This gives further credence to the use of this research design for the main research study as this was the reason for including a quantitative phase.

However, mixing methods using an exploratory sequential design is just one of many different approaches to mixed methods research. It follows therefore that there are numerous reasons for using mixed methods research cited in the literature, including two prominent frameworks, one authored by Greene et al. (1989) and another by Bryman (2006).

Greene et al. (1989) describe five broad reasons to mix methods: triangulation, complementarity, development, initiation, and expansion, as outlined in Table 6 below.

Table 6: Reasons for mixing methods adapted from Greene et al. (1989)

Reason	Explanation
Triangulation	Seeks convergence, corroboration, and correspondence of results from different methods
<i>Complementarity</i>	<i>Seeks elaboration, enhancement, illustration, and clarification of the results from one method with the results from one other method</i>
Development	Seeks to use the results of one method to help develop or inform the other method, where development is broadly construed to include sampling and implantation, as well as measurement decisions
Initiation	Seeks the discovery of paradox and contradiction, new perspectives of frameworks, the recasting of questions or results from one method with the questions or results from the other
Expansion	Seeks to extend the breadth and range of inquiry by using different methods for different inquiry components

As outlined earlier, the reason for using mixing methods was to enable survey research to be undertaken to establish the extent to which the initial qualitative findings were shared among a larger population. Therefore, my rationale for using a mixed methods approach aligns with ‘complementarity’ as defined by Greene et al. (1989). Complementarity is highlighted in italic font in Table 6 above.

The second framework is a more detailed list developed by Bryman (2006). Several of the 16 reasons he lists for using mixed methods relate to my research, as highlighted in italic font in Table 7 below. However, of these I would suggest that ‘instrument development’ and ‘context’ are most closely aligned to my rationale for mixing methods.

Table 7: Rationales for mixing methods adapted from Bryman (2006)

Reason	Explanation
Triangulation or greater to validity	Refers to the traditional view that quantitative and qualitative research might be combined to triangulate findings in order that they may be mutually corroborated
Offset	Refers to the suggestion that the research methods associated with both quantitative and qualitative research have their own strengths and weaknesses so that combining them allows the researcher to offset their weaknesses to draw on the strengths of both
<i>Completeness</i>	<i>Refers to the notion that the researcher can bring together a more comprehensive account of the area of inquiry in which her or she is interested if both quantitative and qualitative research are employed</i>
Process	Refers to when quantitative research provides an account of structures in social life but qualitative research provides sense of purpose
Different research questions	Refers to the argument that quantitative and qualitative research can each answer different research questions
Explanation	Refers to when one is used to help explain findings generated by the other
Unexpected results	Refers to the suggestion that quantitative and qualitative research can be fruitfully combined when one generates surprising results that can be understood by employing the other
<i>Instrument development</i>	<i>Refers to contexts in which qualitative research is employed to develop questionnaire and scale items- for example so that better wording or more comprehensive closed answers can be generated</i>
Sampling	Refers to situations in which one approach is used to facilitate the sampling of respondents or cases
Credibility	Refers to suggestions that employing both approaches enhances the integrity of the findings
<i>Context</i>	<i>Refers to cases in which the combination is rationalised in terms of qualitative research providing contextual understanding couple with either generalisable, externally valid findings or broad relationships among variables uncovered through a survey</i>
Illustration	Refers to the use of qualitative data to illustrate quantitative findings, often referred to as putting 'meat on the bones' of 'dry' quantitative findings

Table 7 continued

Reason	Explanation
<i>Utility or improving the usefulness of findings</i>	<i>Refers to a suggestion which is more likely to be prominent among articles with an applied focus, that combining the two approaches will be more useful to practitioners and others</i>
Confirm and discover	Refers to using qualitative data to generate hypotheses and using quantitative research to test them in a single project
Diversity of views	Includes two slightly different rationales- namely combining researchers' and participants' perspectives through quantitative and qualitative research respectively and uncovering relationships between variables through quantitative research while also revealing meaning among research participants through qualitative research
<i>Enhancement or building upon quantitative and qualitative findings</i>	<i>Entails a reference to making more or augmenting either quantitative or qualitative findings by gathering data using a qualitative or quantitative approach</i>

The reasons for using mixed methods research listed in both of these frameworks therefore align to my rationale for using mixed methods i.e. that a quantitative component was needed for the research to be credible with the intended audience but, because of the lack of published data relating to the phenomena of interest, and in order to undertake quantitative research, exploratory research using a qualitative approach was required initially to identify the variables to study in the quantitative phase of the research. These frameworks therefore give further credence to my rationale for using a mixed methods approach for the main research study.

In addition using mixed methods research enabled me to triangulate the data. As per Table 6 Greene et al. (1989) defines triangulation as '*seeks convergence, corroboration, and correspondence of results from different methods*'. Similarly, as per Table 7 Bryman (2006) defines triangulation as '*the traditional view that quantitative and qualitative research might be combined to triangulate findings in order that they may be mutually corroborated*'. By

undertaking the second quantitative phase of the research the intention was to establish if the findings of the case study research were more widely applicable and a survey provided a method of achieving this, and again the frameworks for mixing methods developed by Green et al. and Bryman give credence to my rationale for using mixed methods research.

In the following section I outline my rationale for using case study methodology for the initial qualitative phase. Later in the chapter in section 7.3 I outline my rationale for using survey methodology for the subsequent quantitative phase.

7.2 Phase 1 methodology: case study research

The methodology employed for the initial phase of the main research study was case study research using a multiple-case design. In this section I outline my rationale for using case study methodology for this phase of the research and why I chose to use a multiple-case design.

Case study research is useful in research which explores the relationship between a phenomenon and the context in which it is occurring (Gray 2014). As outlined in chapter 4, the findings of the initial study suggested that the contextual domain i.e. organisational culture, the leadership of the chief pharmacist and mechanisms of support for pharmacists to undertake research appeared to influence research activity among pharmacists. Case study methodology was therefore employed for the initial phase of the main research study to explore the relationship between these contextual conditions and the phenomenon of interest i.e. research activity among pharmacists.

Case study research was chosen over other qualitative methodologies as it enabled the relationship between the contextual conditions and research activity to be explored in more detail and in a more context-specific way than others would have allowed. For example, individual interviews or focus groups with chief pharmacists and pharmacists representing a large number of organisations would have allowed in-depth study of the phenomenon of

interest, but would not have enabled the contextual conditions to have been explored in the same level of detail as case study research permitted.

Choosing a case study design to explore the relationship between contextual conditions and the phenomenon of interest is analogous with definitions of case study research cited in the literature, as outlined below.

Yin (2014), for example, defines case study research as *'an empirical inquiry that investigates a contemporary phenomenon (the 'case') in depth within its real-world context, especially when the boundaries between phenomena and context may not be clearly evident'* (p.16)

Eisenhart (1989) defines case study as *'a research strategy which focuses on the dynamics present within settings'* (p.534).

Central to both of these definitions is the concept of case study research being focused around the context or setting in relation to the phenomena under study. Yin's definition, however, also includes the idea of case study research being an appropriate choice of research design when the boundaries between the subject of the research and the context lack clarity. Arguably this was also the case for this research as the findings of the initial study suggested that the contextual domain i.e. the organisational culture, the leadership of the chief pharmacist, and mechanisms of support for pharmacists to undertake research appeared to influence research activity. However, because of the small number of Trusts represented in the study, the initial study findings were largely theoretical. Therefore, although the findings of the initial study appeared to suggest that there was a relationship between contextual conditions and research activity, the boundaries between these were not clear.

Yin (2014) also makes reference to situations when case study research would be a 'preferred method' i.e. *'when (1) the main research questions are 'how' and 'why' questions; (2) the*

researcher has little control over behavioural events; and (3) the focus of the study is contemporary (as opposed to entirely historical) phenomenon' (p.2).

All three of these criteria were met for the research undertaken for the main research study. The research was exploratory and therefore asked 'how' and 'why' questions. As outlined in the next chapter (chapter 8), case study sites were selected outside the West Midlands region so any influence over practice I may have had in relation to my professional capacity as Lead Pharmacist for NIHR Clinical Research Network West Midlands was minimised. As a researcher I therefore had no influence on behavioural events. As also outlined in chapter 8, the basis of case study site selection included the pharmacy department employing pharmacists who were either currently undertaking research or had undertaken research recently, making the focus of the study contemporary.

In addition to case study research being an appropriate methodological choice to explore the relationship between the phenomena of interest and associated context, my rationale for using case study methodology for this phase of the main research study was also because the intention of undertaking the research was to gain insights relating to the phenomena of interest. Case study research is recognised in the literature as being an appropriate methodological choice where generating theory is the research purpose (Eisenhardt 1989, Dooley 2002, Yin 2014). Case study research was therefore felt to be an appropriate methodology to use as, although the purpose of the research was not to build theory per se, the aim was to gain an understanding of the phenomena of interest due to the lack of pre-existing knowledge relating to the subject as identified by the evident lack of published literature relating to UK hospital pharmacists' attitudes and opinions towards research.

Case study research designs can be single-case designs or multiple-case (Yin 2014). For this research a multiple-case study design was used as it has been suggested that multiple-case designs are more appropriate than single-case designs for developing theory. For example,

Dooley (2002) suggests that only by observing similar phenomena in similar settings '*will confirmation or disconfirmation of the new theory begin to take shape and gain substance*' (p.336). In this research the case study sites all represented similar settings because, as was described earlier in chapter 1, all of the case study sites were acute secondary care teaching hospital NHS Trusts based in England, and therefore all represented the same type of NHS Trust.

In summary, case study research using a multiple-case design was chosen over other qualitative methodologies for the initial phase of the main research study firstly because case study research is appropriate to explore the contextual domain in relation to the phenomena under study, and secondly because the aim of the research was to generate insights into the phenomena of interest, and for this multiple-case designs are more appropriate than single-case. Interestingly, case study research as a research design has been described in the literature as '*presenting a view of inquiry that takes a pragmatic view of knowledge*' (p.17) (Thomas, Myers 2015). This affirms alignment between my choice of methodology to undertake the research and my philosophical worldview.

The methods used to undertake the case study research are outlined in the next chapter i.e. chapter 8 together with details of the steps taken to ensure the validity and reliability of the case study findings.

7.3 Phase 2 methodology: survey research

The methodology used for the second phase of the main research study, i.e. the quantitative phase, was survey research. The type of survey used to undertake the research was descriptive and the study was cross-sectional. In this section I explain my rationale for using survey research for this phase of the study, and explain why the survey was descriptive rather than analytical, and why the study was cross-sectional and not longitudinal.

Surveys can be categorised as either descriptive or analytical. Descriptive surveys are undertaken to measure the occurrence of certain phenomena in a population of interest (Gray 2014). They are not designed to show causal relationships between variables (Oppenheim 1992). Analytical surveys, on the other hand, are designed to explore and test associations between variables (Gray 2014). While descriptive surveys are therefore designed to measure 'what' occurred, analytical surveys are designed to find out 'why' (Gray 2014). As the purpose of undertaking a survey in this phase of the research was to establish how widely the views of participants in the case study research were shared among a wider population, the survey was descriptive in nature rather than analytical.

Cross-sectional studies look at phenomena under study at a particular period in time (Gray 2014). Longitudinal studies, on the other hand, follow up a sample of individuals or cases over a period of time (Smith 2010). Therefore, in cross sectional studies the data usually relates to a single point or period in time whereas in longitudinal studies data is collected on more than one occasion (Smith 2010). Similar to analytical surveys, longitudinal studies can be used to explore causation between variables. However, the purpose of the survey research was to measure the occurrence of certain phenomena in the population of interest and, therefore, a study using a cross-sectional design was most appropriate to use.

As the purpose of the research undertaken in this phase of the study was to determine the extent to which the findings of the case study research were shared among a wider population, the sample size for this phase was larger than that used for the case study research. As surveys allow for the collection of large amounts of data from sizable populations (Gray 2014), survey research was an appropriate choice of research methodology for this phase of the study. In addition, survey research has also been identified in the literature as being appropriate to measure attitudes, knowledge and behaviour (Bowling 2014). As the purpose of the research undertaken in this second phase was to measure these parameters

among a larger sample than the case study phase, survey research was again an appropriate methodological choice for this phase of the research.

Using survey methodology for this phase of the research was also appropriate because, in common with other quantitative research methodologies, survey methodology is cited in the literature as being appropriate to use in situations in which pre-existing knowledge permits the use of a standardised data collection method (Bowling 2014). As will be described in more detail later in chapter 9, the questionnaire used to collect data for this phase of the research was developed based on the findings of the case study research, and the method of data collection was standardised and developed from pre-existing knowledge.

Survey research is also considered appropriate where the purpose of the research is to document prevalence or test hypotheses (Bowling 2014). As the aim of the research was to establish how widely the findings of the case study research were shared, the purpose of the research was to document prevalence. Survey research was an appropriate methodological choice for this phase of the research.

The methods used to undertake the survey research are outlined later in chapter 9 together with details of the steps taken to ensure the validity and reliability of the survey findings.

8 Case study research

This chapter pertains to the case study research undertaken in the first phase of the main research study. This phase of the main research study is highlighted in Figure 4 below.

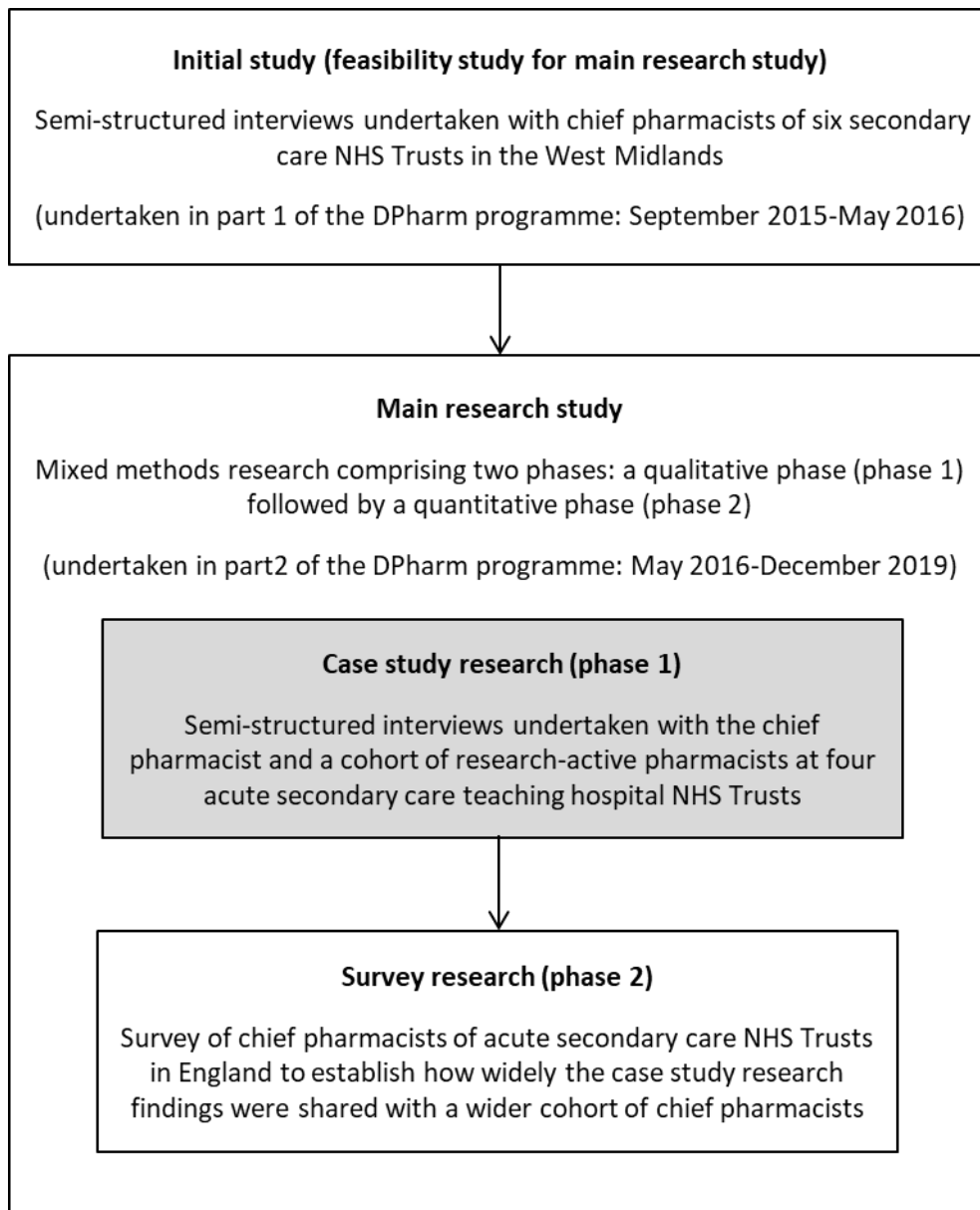


Figure 4: Flowchart highlighting the case study research

As previously outlined in section 7.2, the case study research was exploratory and therefore used qualitative methodology. To undertake the research, a multiple-case design was used where interviews were conducted with the chief pharmacist as well as a cohort of pharmacists with recent research experience at several case study sites all of which were acute secondary care teaching hospital NHS Trusts with research-active pharmacy departments. In this chapter I describe the methods used to undertake the case study research including the sampling strategies used to identify and select case study sites and research participants, and the methods used to collect and analyse the case study data. Later in the chapter I give an account of the findings from this phase of the research.

My rationale for using case study methodology for the qualitative phase of the research is outlined in section 7.2 of the previous chapter.

8.1 Methods

In this section I outline how I selected case study sites and participants, and the methods used to collect and analyse the data.

8.1.1 Case study site sampling strategy

In this section the methods used to select, identify and recruit case study sites are outlined.

Selection of case study sites

In case study research, a case can be a community, organisation or person (Bryman 2012). For the case study phase of the main research study, such cases were the pharmacy departments of Trusts selected to be case study sites, where the case study sites were acute secondary care teaching hospital NHS Trusts based in England with research-active pharmacy departments and different models of support for pharmacists to undertake research.

Acute secondary care teaching hospital NHS Trusts were selected to be case study sites primarily because the aim of the research was to better understand how to engage more

pharmacists employed in the hospital sector with research. Teaching hospitals, as opposed to other types of acute secondary care Trusts, were selected since according to the National Institute for Health Research (NIHR) Research Activity League Table for the financial year 2015/16 (NIHR 2016), 19 of the top 20 NHS acute Trusts were teaching hospital Trusts when ranked by both number of NIHR portfolio studies open and number of participants recruited into studies. For the purposes of identifying case study sites, it was assumed that Trusts undertaking higher levels of NIHR portfolio research were more likely to have research-active pharmacy departments. League tables for the financial year 2015/16 were used as this was the most recent data available at the time of developing the research proposal in 2016. Interestingly, since the research proposal was developed, the 2017 European Standards of Hospital Pharmacy Statements Survey reported pharmacists based in teaching and university hospitals published more research compared to non-teaching hospitals, giving credence to the decision to select teaching hospitals to be case study sites (Horák et al. 2018). Case study sites were geographically restricted to Trusts in England because of the variation in models of healthcare in the devolved nations (Bevan et al. 2014).

In terms of the strategy for selecting Trusts to be case study sites, Trusts were selected which had high levels of research activity among pharmacists and represented different models of support for pharmacists to undertake research. The rationale for choosing Trusts which met these criteria was to explore the influence of these different models of support on research activity and thereby identify common factors relating to these models of support which were associated with the higher levels of research activity among pharmacists in these organisations. This rationale for using Trusts with different models of support for pharmacists to undertake research as case study sites links back to my rationale for using a multiple-case study design to build theory.

It could be argued that selecting Trusts to be case study sites because they represent different models of support, contradicts the rationale for using a multiple-case study design to build theory outlined in the previous chapter (section 7.2). However, in relation to the selection of cases in multiple-case design, Yin (2014) discusses the idea of 'replication logic' i.e. that each case should be selected to either predict similar results (literal replication) or contrasting results for anticipatable reasons (theoretical replication). On the face of it, selecting Trusts to be case study sites representing different models of support for pharmacists to undertake research would suggest the strategy for selecting case study sites to align with the theoretical replication logic suggested by Yin. However, I would argue that, because all of the Trusts selected to be case study sites had high levels of research activity among pharmacists as well as a model of support, albeit different ones, the selection of case study sites aligned more to literal replication logic as they were selected on the premise that having a model of support for pharmacists to undertake research led to higher levels of research activity. Consideration was given to choosing other types of case study sites e.g. where the pharmacy department was either not research-active or had low levels of research activity. However, there were concerns that individuals working in such environments would not have had sufficient insight to be able discuss factors contributing to why they felt unable to undertake research or to discuss factors which would enable them to conduct research due to their lack of exposure to such factors.

NB Cases were the pharmacy departments of the Trusts selected to be case study sites rather than the Trusts in their entirety because the pharmacy departments were the focus of the research. For example, the influence of Trust-level aspects of the contextual domain such as the organisational culture of the Trust and Trust-level models of supports for research activity were only explored in the context of their influence on research activity levels among pharmacists.

Identification of potential case study sites

The strategy for selecting cases consisted of a two-stage approach i.e. maximum variation sampling followed by extreme or deviant case sampling. Maximum variation sampling involves selecting a diverse range of cases so that common patterns from this variation can be identified whereas in extreme or deviant case sampling, cases are selected because they are unusual or special in some way, with the intended purpose of doing so being to help identify conditions or features that might explain differences in outcomes (Gray 2014). Maximum variation sampling was therefore used to select Trusts to be case study sites which represented different models of support for pharmacists to undertake research. Extreme or deviant case sampling, on the other hand, was used to select those Trusts with the highest levels of research activity to represent each of the models of support.

However, before Trusts could be selected as case study sites, potential sites had to be identified. In order to identify potential sites, a scoping exercise was undertaken in which Trust data relating to both levels of research activity among pharmacists and models of support for pharmacists to undertake research was collected. Case study sites were then selected based on the information obtained from the scoping exercise.

Scoping exercise

In this section the methods used and findings of the scoping exercise undertaken to identify potential case study sites are presented.

Method

To collect the data needed to identify potential case study sites, a survey was developed which was distributed as an email survey to chief pharmacists of acute secondary care teaching hospital NHS Trusts.

To establish levels of research activity, survey respondents were asked to provide demographic data relating to the number of pharmacists employed within their Trust by headcount, and the number of pharmacists both undertaking research at that time and within the preceding three years, again by headcount. In line with the definition of research involvement devised for the purposes of the main research study i.e. that for the purposes of the main research study pharmacists' involvement in leading or collaborating in all types of research was included except for activities related to managing clinical trials medicines. The email survey stated that pharmacy clinical trials staff solely involved in IMP management activity to support the delivery of research should be excluded from this headcount.

To identify case study sites with different models of support for pharmacists to undertake research, respondents were also asked about models of support within their organisations for pharmacists to undertake research. Models of support for pharmacists to undertake research included in the scoping exercise were organisations being part of an Academic Health Science Centre (AHSC) and/or the pharmacy department having an Academic Practice Unit (APU). A Trust being part of an AHSC was chosen as a model of support based on my personal knowledge gained through my role with the Clinical Research Network. APUs were chosen based on pharmacy APUs being identified from the literature review as a model of support for pharmacists to undertake research, and through my personal knowledge. Definitions of AHSCs and APUs and the backgrounds to their establishment are provided below.

AHSCs are partnerships of NHS Trusts and universities designated by what is now the Department of Health and Social Care but which at the time of the scoping exercise being conducted was the Department of Health (Department of Health 2013). Such centres were established to research new treatments, and improve patient care and healthcare delivery as well as drive economic growth through partnerships with industry.

APUs are defined as *'discrete centres which link academic institutions with practice, whether in the hospital, community, or industrial sectors...designed to blend the work of pharmacy academics and practitioners'* (p.188) (Wolfson 1992). Such units were originally established following the Nuffield Report published in 1986 which recommended that Schools of Pharmacy should set up academic units in hospitals to act as bases for teaching and research (Nuffield Foundation 1986). AHSCs are therefore organisational level academic collaborations whereas APUs represent collaborations with academia at departmental level.

In addition to being asked whether the organisation had one or both of these specific models of support, respondents were also asked about 'other' models of support which were in place for pharmacists to undertake research by the inclusion of a free-text option in the survey response options for this question. For a copy of the email survey refer to appendix 9.

Chief pharmacists were selected to be survey recipients as it was felt that they would be in the best position to either provide the information requested in the survey or, due to the hierarchical organisational structure of pharmacy departments in acute secondary care NHS trusts, request that a member of their staff respond on their behalf.

The survey was distributed as an email survey via the chair of the Association of Teaching Hospital (ATHP) chief pharmacist network who forwarded an email to all members of the network on my behalf. This was because a list of acute secondary care teaching hospital NHS Trusts was not available and Trust membership of the Association of Teaching Hospital Pharmacists was therefore used as a proxy. Although the survey was distributed by the chair of the ATHP chief pharmacist network, responses were requested to be returned to me directly. Microsoft Excel was used to collate the survey responses.

To analyse the data in relation to levels of research activity at each Trust, the ratio of the number of research active pharmacists at the Trust by headcount to the number of

pharmacists employed at the Trust by headcount was used. The number of research active pharmacists was defined as the number of pharmacists who were either undertaking research at the time of the survey or who had undertaken research in the three years preceding.

NB As the scoping exercise was undertaken solely to identify case study sites, the ethics service at Keele University felt that ethics approval was not required (refer to appendix 10 for a copy of the email from Keele University Ethics Service confirming that ethics approval was not required)

Findings

The email survey was distributed to the chief pharmacists of 41 Trusts based in England, and responses were received from 10 of them. The survey response rate was therefore 24%.

From the responses four different models of support for pharmacists to undertake research were identified, as listed below:

- The Trust was part of an AHSC but the pharmacy department did not have an APU
- The pharmacy department had an APU but the Trust was not part of an AHSC
- The Trust was part of an AHSC and the pharmacy department had an APU
- The department had a pharmacist with responsibility for supporting pharmacists to undertake research in a recognised role but the Trust was not part of an AHSC and the pharmacy department did not have an APU

Identification and recruitment of case study sites

Trusts were identified to be potential case study sites from the responses to the scoping exercise. As four models of support for pharmacists to undertake research had been identified from the scoping exercise, four Trusts were selected to be case study sites, each selected to represent one of the four identified models of support. Where several Trusts were identified

representing the same model of support, the Trust with the highest level of research activity was selected to be the case study site to represent that model of support.

In terms of the number of cases, it has been suggested by both Eisenhardt (1989) and Stake (2006) that for multiple case studies between 4 and 10 cases usually works well. Eisenhardt (1989) for example argues that with fewer than four cases, generating theory with much complexity is often difficult and the empirical understanding is likely to be unconvincing, and with more than ten, the volume and complexity of data can become overwhelming. Four case study sites was therefore an appropriate number.

To recruit case study sites, the chief pharmacists at the four potential case study sites identified from the scoping exercise were each emailed to ask if they would be willing to agree for their Trust to be a case study site. As is outlined later in the chapter in section 8.1.2.2 because the research design required that the chief pharmacist at each case study site participated, chief pharmacists were also invited to take part in the study in the same email. Refer to appendix 11 for a copy of the email.

8.1.2 Participant sampling strategies

In this section the methods used to select, identify and recruit participants are outlined.

Selection of participants

As outlined above in the introduction to the chapter, at each case study site interviews were undertaken with the chief pharmacist and a cohort of research-experienced pharmacists. My rationale for selecting these participants is given below.

At each case study site the chief pharmacist was interviewed because the findings of the initial study suggested that the leadership of the chief pharmacists themselves appeared to influence research activity within their departments. Interviews at each site were also undertaken with a cohort of pharmacists with research experience to explore the phenomena under study from

multiple perspectives with the aim of triangulating the data and in so doing, provide better substantiation of the any theory developed (Eisenhardt 1989). To be eligible to participate, pharmacists were required to have recent research experience and therefore be either undertaking research at the time of the study or have undertaken research within the preceding three years. This requirement ensured that the pharmacists' views reflected current practice and that the research was therefore contemporary. This aligns with one of the three criteria that Yin (2014) set out for when case study research can be considered to be a preferred method i.e. when the focus of the study is contemporary phenomena as opposed to being entirely historical (see section 7.2). It was also felt that limiting participation to those with research experience would mean that participants would have a better insight into the factors influencing research engagement than those without experience, as it was felt that the chief pharmacists who participated in the initial study and who had themselves undertaken research, had greater insight into the factors influencing research activity among pharmacists compared to those who had not personally undertaken research previously.

The eligibility criteria for both the chief pharmacist and pharmacist participant groups are summarised in Table 8 below.

Table 8: Inclusion and exclusion criteria for case study research participants

Participant group	Inclusion criteria	Exclusion criteria
Chief pharmacists	Chief pharmacists of acute NHS teaching hospital Trusts in England where pharmacists are currently undertaking research and/or pharmacists have undertaken research within the previous 3 years	Chief pharmacists of Trusts not selected as case study sites
Pharmacists	Pharmacists who are currently working in an acute NHS teaching hospital Trust in England who are either currently undertaking research and/or have undertaken research within the previous 3 years	Pharmacists not currently research-active or research-active within the previous 3 years

Identification and recruitment of participants

In this section I describe how chief pharmacists and pharmacists were identified and invited to participate.

Identification and recruitment of chief pharmacists

In terms of the identification of chief pharmacists to invite to participate, due to the requirement that, for a Trust to be a case study site, the chief pharmacist needed to agree to participate personally. The recruitment of chief pharmacists as participants was therefore an integral part of the process to identify and recruit case study sites. The email asking chief pharmacists if they were willing for their Trust to be a case study site also invited them to participate themselves. A copy of the participant information sheet and the consent form for their participant group was therefore attached to the email (see appendices 12 and 13 for copies of the chief pharmacists participant group participant information sheet and consent form respectively).

Identification and recruitment of pharmacists

As outlined earlier in section 0, in addition to the chief pharmacist being interviewed, interviews were also undertaken with a cohort of pharmacists with recent research experience at each case study site. Once the chief pharmacist confirmed that they were willing for their Trust to be a case study site and were willing to participate themselves, pharmacists at the respective case study sites were invited to participate via email. However, as lists of the names and contact details of pharmacists at each case study site were not available, the chief pharmacist was asked to forward an invitation email to all pharmacists employed in their organisation on my behalf. Refer to appendix 14 for a copy of the invitation email to pharmacists at case study sites. Therefore, as the chief pharmacist at each case study site had a role to play in supporting the identification of pharmacists at their Trust to take part, it could be argued that the sampling strategy aligns most closely with that of snowball sampling where the researcher *'identifies a small number of subjects, who, in turn, identify others in the population'* (p.223) (Gray 2014). However, as chief pharmacists played no active role in identifying participants other than forwarding an email on my behalf, they performed a *'gatekeeper'* function and therefore acted as a conduit to recruitment (Creswell 2014). Nevertheless their involvement meant that as a researcher, I was able to invite pharmacists to participate who would otherwise have been difficult to access because no usable sampling frames were available.

In order to protect their identity, pharmacists interested in participating were asked to respond to me directly rather than through their chief pharmacist. A copy of the participant information sheet and the consent form for the pharmacist participant group were attached to the email (see appendices 15 and 16 for copies of pharmacists participant group participant information sheet and consent form respectively). Further details regarding how the identity of participants was protected can be found in section 8.1.5 which relates to research governance and ethics considerations for the case study research.

8.1.3 Data collection

To collect data at each of the case study sites, individual face-to-face semi-structured interviews were undertaken with the chief pharmacist and a cohort of pharmacists with research experience to explore their attitudes and opinions towards pharmacists undertaking research.

Interviews were used to collect data to explore the phenomena of interest from the respondents' perspectives as well as to facilitate the collection of rich data by encouraging interviewees to share as much information as possible. Semi-structured interviews enabled open questions to be asked allowing respondents to describe their views and opinions in their own words, according to the issues important to them (Legard et al. 2003). Semi-structured interviews, as opposed to unstructured or structured interviews, ensured some degree of commonality between interviews by the use of pre-determined questions while allowing flexibility in the conduct of the interviews by allowing additional questions to be asked in response to participants' comments and reactions (Bryman 2012, Britten 2006). Interviews were conducted face-to-face, as opposed to by telephone, to help build rapport and therefore obtain more detailed and considered responses (Smith 2010).

Individual interviews as opposed to focus groups were undertaken for several reasons. Firstly, it was anticipated that pharmacists who met the inclusion criteria at each case study site would more than likely represent various levels of seniority, and that therefore junior staff may not have felt able to express their opinions openly in a focus group due to more senior staff being present. Similarly, if the chief pharmacist had been invited to attend the same focus group as other participants, those other participants may equally have not felt able to freely express their opinions. The presence of the chief pharmacist in a focus group at a case study site may therefore have inhibited discussion (Fitzpatrick, Boulton 1996). Not only could the use of focus groups potentially have affected the validity of the research, but may also

have posed a barrier to participation in the research for more junior members of staff. In addition, in group situations it can be more difficult to probe for further details than in individual interviews (Fitzpatrick, Boulton 1996). On a more practical level, it was anticipated that focus groups would also have been difficult to arrange due to the availability of participants, and the logistical difficulties associated with bringing staff together in the same location when they may be based at geographically different sites within the same Trust. Individual interviews, on the other hand, meant that interviews could be arranged for times and locations convenient to the participants.

In the context of case study research, Yin (2014) suggests the strengths of interviews as a source of evidence are that they are 'targeted' in that they focus directly on the case study topic and 'insightful' in that they provide explanations as well as personal views (e.g. perceptions, attitudes and meanings). Interviews were therefore an appropriate choice of research method for the case study research undertaken in this phase of the research given that the purpose was to explore participants' attitudes and opinions.

To collect the data I conducted all interviews with research participants and all interviews were undertaken face-to-face. Provision was also made in the ethics application and the application for Health Research Authority (HRA) approval for the study to conduct telephone interviews if more than seven pharmacists at each case study volunteered to participate. This provision was included due to time constraints associated with undertaking the research as part of a part-time DPharm qualification since on each day of interviews I anticipated I could undertake four interviews. As the maximum time available to me to visit each site was two days I could undertake a maximum of eight interviews face-to-face at each case study site (the chief pharmacist and up to seven pharmacists). Telephone interviews would therefore have been employed had more than seven pharmacists at each site volunteered to participate. However, this was not necessary. For the convenience of participants, all interviews were

undertaken at their place of work and were arranged for a mutually convenient date for the participant and myself. Each interview took between 23 and 67 minutes.

To give the interviews a framework and help ensure that all relevant information was collected, interview guides were developed for the two participant groups (see appendices 17 and 18 for interview guides for the chief pharmacists group and the pharmacists group respectively). In terms of the design of the interview guides, the opening questions of both interview guides were designed to be relatively straightforward to answer to help put respondents at ease and therefore help build rapport (Britten 2006, Legard et al. 2003). Leading questions were avoided to reduce the risk of me, as the researcher, unduly influencing participants' responses (Bryman 2012). Probing questions were also used to further explore interesting points made by respondents (Bryman 2012). Also, due to the iterative nature of qualitative research, preliminary data analysis was undertaken concurrently with data collection (see section 8.1.4 for more detail), amendments were made to the interview guide as the research progressed (DiCicco-Bloom, Crabtree 2006). Refer to appendices 19 and 20 for copies of the amended interview guides for the pharmacist participant group and the chief pharmacist participant group respectively. To provide complete records interviews were audio-recorded with permission from participants and transcribed verbatim.

As the potential for confusion in relation to research involvement had been identified from the initial study and literature, I applied the definition of exclusion developed for the purposes of the main research study, as outlined in section 6.2.2.2, to the case study research as I had done previously in the email survey used in the scoping exercise. However, I did not offer my definition of research involvement to participants upfront. Instead I decided only to offer the definition to participants if they sought clarification regarding activities which constituted research involvement during the course of their interview. If they did seek clarification I

explained that for the purposes of the study pharmacists' involvement in IMP management activity to support the delivery of clinical trials was excluded.

8.1.4 Data analysis

The method of data analysis used was based on the qualitative analytic method of framework analysis (Ritchie, Spencer 1994). To analyse the data themes were identified from the data itself, in addition to the findings being compared to a priori themes identified from the literature review and initial study. Rather than following a purely inductive approach to data analysis, the approach was also deductive in nature in that themes were both identified as new insights emerged from the data in addition to the analytical themes derived from the research questions, initial study and existing literature (Ritchie, Spencer 1994). To identify themes from the data, I first familiarised myself with the interview transcripts by reading them several times while noting down ideas. I then generated initial codes across the data set, and then searched for themes by collating codes into potential themes and by gathering together all data relevant to each theme. I then reviewed and revised these themes as I retested them against the data, the data analysis was therefore an iterative process. Data collection and analysis were not however undertaken in a purely linear fashion. Instead, in order to develop an emerging understanding of the data, data analysis and collection were undertaken concurrently i.e. interview transcripts were analysed between interviews where possible.

As described earlier, during the course of the data analysis the findings were also compared to previously identified themes from both literature reviews and the initial study findings. Although my approach to analysing the data was mostly inductive, as it was largely grounded in the data, it was also to some extent deductive in that it was informed by a priori themes from the literature review and initial study. These a priori themes were used not only in the application of the principles of framework analysis to the data analysis, but also influenced the choice of questions included in the interview guides and in the research questions themselves.

During data analysis I also searched the data for 'deviant cases' i.e. cases where my interpretation of the data appeared weak or was contraindicated by the evidence (Mays, Pope 1995). In this report I have tried to give a fair account and explanation of the reasons for these variations to enhance the data validity (see section 8.1.6 re research validity and reliability). In addition, to enhance the validity and reliability of the findings, I discussed the themes identified from the data with my supervisory team as part of the analysis. However, respondent validation, in terms of seeking confirmation from those who participated in the research that the findings from analysing the data were congruent with their views with, for example, participants from a particular case study site, was not possible due to the need to protect the anonymity of participants (Bryman 2012).

NVivo (a software programme designed for qualitative analysis) was used to help with data management (Richards 1999) and anonymised short quotes were used to illustrate findings.

Regarding the approach to data analysis, the data relating to participants' attitudes and opinions to the drivers, drawbacks, barriers and enablers to pharmacists undertaking research was analysed separately to the data pertaining to the contextual conditions at case study sites and their influence on research activity among pharmacists.

In terms of the data pertaining to the participants' attitudes and opinions to the drivers, drawbacks, barriers and enablers to pharmacists undertaking research, the data from all four case study sites was analysed as one data set. The data from the interviews with the chief pharmacists was also collectively analysed, as was the data from the pharmacist participant groups from all four case study sites, to identify patterns across the different participant groups. Figure 5 below illustrates how the data pertaining to participants' attitudes and opinions to the drivers, drawbacks, barriers and enablers to pharmacists undertaking research was analysed.

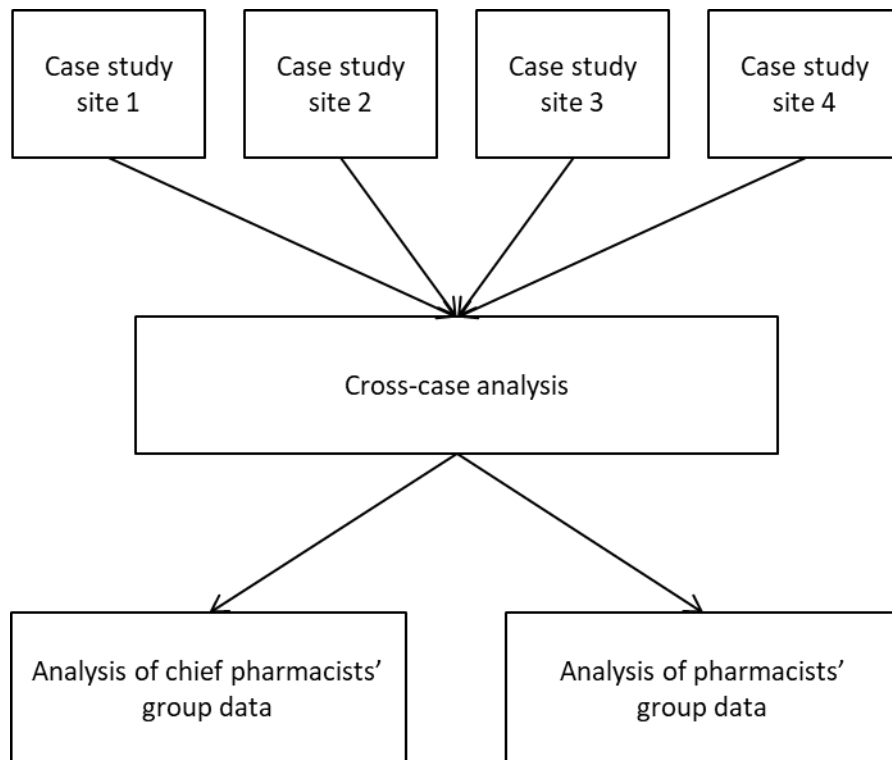


Figure 5: Illustration of how the data pertaining to participants' attitudes and opinions to pharmacists undertaking research was analysed

To analyse the data relating to the contextual conditions at case study sites and their influence on research activity among pharmacists, a within-case analysis was undertaken initially i.e. data from each case study site was analysed separately. Following this within-case analysis, cross-case analysis was undertaken where data from each case study site was collectively examined for patterns across the cases by looking for similarities and differences in the data from the individual sites (Eisenhardt 1989). Figure 6 below illustrates how the data pertaining to the contextual conditions at case study sites and their influence on research activity among pharmacists was analysed.

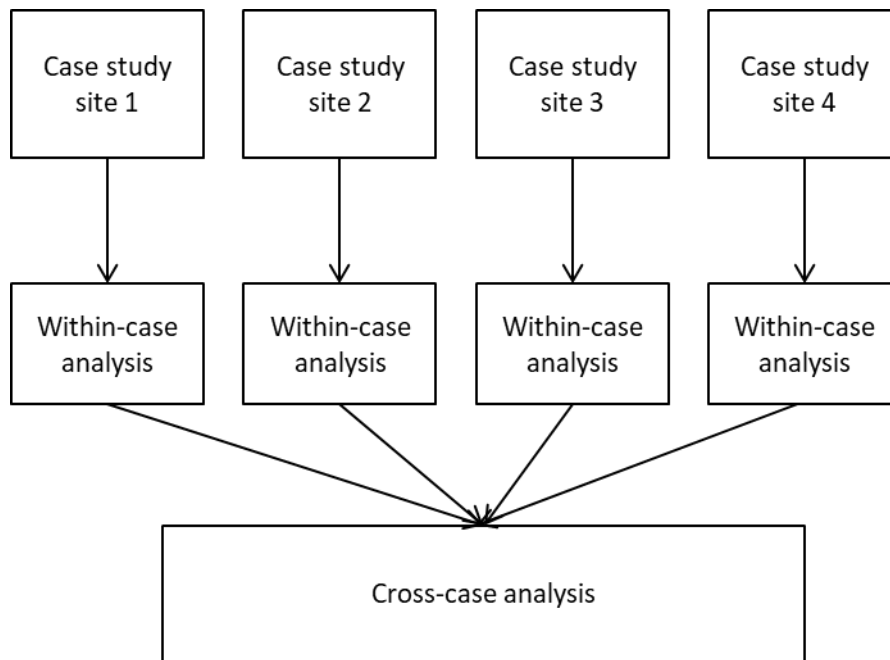


Figure 6: Illustration of how the data pertaining to the contextual conditions at case study sites was analysed

8.1.5 Research ethics and governance

In this section I outline the steps taken to ensure the research was undertaken ethically and complied with the regulations for undertaking research in the NHS.

Ethical and governance considerations

The level of risk for participants taking part in the research was relatively low. Participants were not from vulnerable groups, sensitive topics were not involved, the research neither involved participants undergoing any intrusive strategies and the research was unlikely to lead to participants feeling stressed, anxious or humiliated (Gray 2014).

As the research required respondents to express their views and opinions, issues relating to participant anonymity and confidentiality were the most significant ethical and governance considerations.

In terms of anonymity, the possibility that participants may be identified by role was acknowledged. To minimise this risk, all data was anonymised and any identifying information was removed. In addition, to protect the identity of all participants, participating Trusts are not identified, and, to protect the identity of individuals in the pharmacist participant group, their specific job titles have not been referred to in this thesis and will not be referred to in any resulting publications. All participants were also given an anonymous study identification number which was used for audio files and transcriptions, with the list of study identification numbers kept separately to the audio files and transcriptions. Data containing personal information was therefore not able to be linked to anonymised data.

All personal information relating to participants was kept strictly confidential with no one outside the research team (i.e. myself and my academic supervisors) allowed access to it. Electronic data containing personal information were stored on password-protected media to which only the research team had access. Hardcopies of data were stored in a locked cupboard with access again restricted to the research team.

Informed consent was obtained from participants before interviews were undertaken. To ensure participants were able to give informed consent, potential participants were provided with a copy of the participant information sheet for their participant group together with a consent form. The participant information sheets, although different for the two participant groups, covered the same salient points i.e. the purpose of the research, what was involved, any risks associated with their participation, and information relating to anonymity and confidentiality. The consent forms were, however, identical for both groups. As outlined earlier, copies of the relevant participant information sheet and consent form were attached to the invitation emails to ensure that potential participants had time to read them and to ask questions. The participation information sheets made it clear to potential participants that they were being invited to take part, and were therefore free to decide whether or not they

wished to participate. They were also given two weeks from the date of the invitation email to decide whether or not they wished to take part and told that they had the right to withdraw from the research at any point during the interview and up to 30 days from the date of the interview taking place. It was therefore made transparent to participants that their participation in the research was entirely voluntary and that they had the right to withdraw. To confirm their consent, potential participants were asked to sign and return a copy of the consent form before their interview was undertaken.

Ethics approval

Since the main research study was undertaken in part 2 of the DPharm programme it was classed as postgraduate research. Ethics approval was therefore obtained from one of Keele University's Ethical Review Panels (ERPs), unlike the initial study where approval from the School of Pharmacy Ethics Committee had been sufficient (Keele University 2016).

Initial approval for the research was obtained from one of the university ERPs. However, following ethics approval being obtained, amendments to the study were needed to meet the requirements of the HRA approval application using the Integrated Research Application System (IRAS). An application for an amendment to the original ethics approval was made and approval for the amendments obtained. Refer to appendices 21 and 22 for copies of the ethics approval letters for the original and amended applications respectively.

As the questions to be included in the survey were dependent on the findings of the case study research, the survey phase of the research was not included in the application for ethics approval for the case study research. Instead, the inclusion of a survey was made as a subsequent amendment to the original ethics application, as detailed in section 9.1.4.

Health Research Authority (HRA) Approval

Research studies undertaken in the NHS require HRA approval i.e. an assessment of the governance and legal compliance of studies (HRA 2016). The main research study therefore

required HRA approval, firstly because the study involved NHS staff by virtue of their professional role and secondly, because it was classed as research according to the HRA decision tool (HRA 2015). NHS Research Ethics Committee review was not required as part of HRA approval for the study as neither patients nor service users were involved. Refer to appendix 23 for copy of the HRA approval letter.

For the survey research undertaken in phase 2 of the main research study, an amendment was submitted to the HRA, details of which can be found in section 9.1.4.

8.1.6 Research validity and reliability

In terms of research rigour some commentators argue that validity and reliability are concepts that are not applicable to qualitative research (Bryman 1988). However, I feel these concepts are applicable to research such as this undertaken using a qualitative methodology. Indeed Morse (2015) argues that terms including rigour, reliability and validity and generalisability can be applied to research undertaken using qualitative methodologies. In this section I outline the steps taken to help ensure rigour in the research undertaken in this phase.

Validity relates to the extent to which the findings of a study are a true representation of the phenomena under study (Anderson 2010).

Data triangulation is cited as a way to help ensure the validity of qualitative findings (Anderson 2010, Fitzpatrick, Boulton 1996). Interviewing the chief pharmacist and a cohort of pharmacists at each case study site went some way towards data triangulation as data was collected from different staff groups at different levels in the organisations i.e. the chief pharmacist and their subordinates.

Researcher bias is a major challenge to the validity of qualitative research (Roberts, Priest 2010). To address this I have tried to be reflexive and have therefore critically reflected on my influence on the research process (see chapter 11 re reflexivity). To enhance the validity of the

data collection, interview guides were developed to ensure that the questions asked related to the research objectives and were based on previous research findings. In terms of the conduct of the interviews, techniques were used to help build rapport and trust with participants and therefore help them to feel comfortable and able to freely express themselves. Probing questions were used to prompt participants to expand on their initial responses where appropriate, and the time allocated to undertaking interviews was sufficiently long for topics to be explored in depth (Arksey, Knight 1999). Reassurance regarding the steps I would take to ensure anonymity and confidentiality were also outlined in the participant information sheets in an attempt to ensure respondents felt able to freely express themselves (Smith 1998). In addition, although participants could have deduced I was a pharmacist by background due to the participant information sheets stating that the research was being undertaken as part of a DPharm qualification, participants were purposefully not informed of my role within the NIHR to minimise any potential skewing of the data relating to my role being based in research delivery.

In terms of data analysis and research validity, using framework analysis to analyse the data (Ritchie, Spencer 1994) and comparing the findings to previous studies also contributed to enhancing the validity of the findings (Gray 2014), as did searching the data for deviant cases (Mays, Pope 1995). Audio-recording the interviews and accurately transcribing the interview data verbatim also contributed to the data validity (Smith 1998). The inclusion of anonymised verbatim quotes to illustrate the findings in this report is a further attempt to enhance the research validity (Gray 2014).

Respondent validation i.e. involving participants in checking the data for accuracy and interpretation is often cited as another approach to ensuring the validity of qualitative data (Gray 2014, Fitzpatrick, Boulton 1996, Mays, Pope 1995). Given the time limited nature of the study, however, this was not a viable option for this research. Other methods include

independent analysis of the data by another researcher to see if they come to similar conclusions (Gray 2014, Mays, Pope 1995). Again, this was not possible given that only my own time and that of my supervisors was resourced to undertake the research.

Reliability is another concept associated with rigour, which in qualitative research refers to reproducibility and consistency of the findings i.e. the extent to which the findings and conclusions of one researcher can be replicated by another researcher doing the same research (Anderson 2010, Gray 2014).

Developing and using interview guides contributed to the reliability of the data by ensuring that each respondent was asked the same or similar questions. However, as the interviews were semi-structured, as opposed to structured, the interview guide developed was used more as a framework to ensure that similar content was covered in each interview and there was some variation therefore between participants in terms of the actual questions asked. Personally undertaking all of the interviews would, to some degree, have enhanced the reliability of the research by minimising 'interviewer bias' (Gray 2014).

8.2 Results

In this section an analysis of the case study research findings is presented. The results are reported in three sections. In the first section (section 8.2.1) demographic data pertaining to the case study sites and participants is reported. In the second section (section 8.2.2) findings relating to participants attitudes and opinions towards the drivers, drawbacks, barriers and enablers to hospital pharmacists to undertake research are presented. In the third section (section 8.2.3) an analysis of the data relating the contextual conditions influencing research activity at the case study sites is presented.

All those who volunteered to participate were interviewed. In terms of achieving data saturation, overall I felt this was achieved across the dataset in its entirety i.e. across the

collated data from all of the case sites as a point was reached where I conducted a number of interviews where no new themes were identified. However, I cannot be sure data saturation was achieved at case study site 2 due to the low number of pharmacists who volunteered to participate there.

NB Data from interviews undertaken with three participants are not included in the analysis for reasons which became apparent through the interviews that would have led to a non-homogenous dataset. Two participants were not practising as pharmacists at the time of the interviews and a third, although undertaking research as part of their role, was not employed by the pharmacy department but was instead employed by the clinical specialty in which they worked. It was therefore felt that all three participants would not have been subject to the same contextual conditions as other participants. I have also purposefully not reported the number of participants in the pharmacists' group at each case study site to help maintain the anonymity of those who participated.

8.2.1 Demographic data

In this section demographic data relating to the case study sites and the participants is presented.

8.2.1.1 Case study site demographic data

At each case study site chief pharmacists were asked how many members of staff were employed in the department and of those how many were pharmacists. This data is presented in Table 9 below.

Table 9: Approximate total number of staff and number of pharmacists employed at each case study site

Case study site	Approximate total number of staff employed in pharmacy (headcount)	Approximate number of pharmacists employed (headcount)
1	230	120
2	300	100
3	320	100
4	190	70

8.2.1.2 Participant demographic data

Across the four case study sites a total of eighteen participants took part comprising fourteen in the pharmacists' participant group and the chief pharmacists at each of the four case study sites. All participants in the pharmacists group at each case study site were asked how many years they had been qualified as a pharmacist and what postgraduate qualifications they held. A summary of this data collected from all four case study sites is presented in Table 10 below.

Table 10: Number of years qualified and level of postgraduate qualifications obtained by participants in the pharmacists group across all four case study sites (n=14)

Demographic data collected		Number of participants (%)
Number of years qualified as a pharmacist	0-5	0 (0%)
	5-10	3 (21.4%)
	10+	11 (78.6%)
Level of postgraduate qualification*	Diploma	1 (7.1%)
	Masters	5 (35.7%)
	Doctoral	8 (57.1%)

*In relation to the academic level of postgraduate qualifications obtained only the highest level of qualification is included in the figures. For example, if an individual had a postgraduate masters and a doctorate, only the doctorate is included in the figures.

Chief pharmacists were also asked whether they had personally undertaken research in their professional career, and 3/4 (75%) of chief pharmacists said they had personal experience of undertaking research.

8.2.2 Drivers, drawbacks, barriers and enablers to hospital pharmacists undertaking research

In this section an analysis of all of the data collected across the four case study sites pertaining to participants' attitudes and opinions to the drivers, drawbacks, barriers and enablers in relation to hospital pharmacists undertaking research is presented.

Definitions for each of the four theme categories for the purposes of this research are provided in Table 11 below.

Table 11: Theme category definitions

Theme category	Definition
Driver	Perceived to instil in an individual a desire to undertake research
Drawback	Perceived as a downside or being in some way detrimental to an individual undertaking research
Barrier	Perceived to prevent an individual from undertaking research or make undertaking research difficult for an individual
Enabler	Perceived to facilitate an individual to undertake research or allow an individual to undertake research

All four of these theme categories can then be divided into the following subcategories: personal or external.

Definitions for each of these theme subcategories are provided in Table 12 below.

Table 12: Theme subcategory definitions

Theme subcategory	Definition
Personal	Perceived to relate to an individual
External	Perceived to relate to the organisation and/or profession

Results pertaining to each of these theme categories are presented in turn below. Where appropriate, distinctions are made between the attitudes and opinions of chief pharmacists as a group and other participants.

To avoid the risk of participants potentially being identified, quotes to illustrate findings have not been included where the quote itself could potentially identify a participant by their role. In addition, specific words have been removed from some quotes and replaced with more generic terms where there was perceived to be a risk that the quote could identify an

individual or case study site. For example I have replaced 'he' or 'she' to 'they', the names of any specific Trusts or academic institutions referred to by participants have been replaced by terms such as 'the name of the Trust' or 'a named University', and no specific grants or postgraduate qualifications have been named.

8.2.2.1 Drivers

A summary of the findings regarding the themes identified relating to drivers is presented in Table 13 below, which is then followed by a more detailed analysis of the data relating to each theme by subcategory.

Table 13: Summary of the themes relating to drivers

Theme subcategory	Theme	Description of theme
Personal drivers	Job satisfaction	Job satisfaction in its entirety and job satisfaction relating specifically to research adding variation to an individual's role
	Personal kudos	Kudos associated with individual recognition through publications and being recognised as an expert in a field
	Professional development	Developing professionally as a result of undertaking research through gaining transferable skills and research expertise; research helping with career progression and increasing career opportunities; having clearer career pathways associated with research
	Research experience	Having experience of undertaking research leading to a desire to undertake further research
	Personal desire to change the practice of pharmacy	Having a desire to improve patient care at a strategic level
External drivers	Need for evidence from research	Examples cited included needing evidence to support business cases and to provide assurance that changes to pharmacy practice are without negative or unintended consequences
	Professional kudos	Undertaking research giving pharmacists a better standing as a profession
	Professional expectation	Research being an integral part of being a pharmacist by profession
	Expectation of employer	Research being an expected part of an individual's role by their employer
	Organisational reputation	Being research active being good for the reputation of the department nationally, as well as the reputation of the department within the Trust
	Income generation	Income for the Trust associated with successful grant applications

Table 13 continued

Theme subcategory	Theme	Description of theme
External drivers (continued)	Organisational culture	Departmental culture being encouraging of research cited as driving research activity; a requirement for the department to be research active by the Trust cited as a potential driver for departmental research activity
	Departmental leadership	Having a pharmacist within the department whose role encompasses leading research
	Departmental role models	Having research active pharmacists within the department

Personal drivers

In terms of personal drivers, the following themes were identified:

- Job satisfaction
- Personal kudos
- Professional development
- Having research experience
- Having a personal desire to change practice.

Job satisfaction associated with research was perceived to be a significant motivator for pharmacists to undertake research as illustrated by one participant who described job satisfaction as a driver to engagement to be 'right at the top of the list'. Adding variation to pharmacists' roles was cited as one reason why research would contribute to an individual's job satisfaction.

Personal kudos from research was also perceived to be a driver. Cited in this context was the kudos associated with being a recognised expert in a particular field and the increased

credibility individuals felt this gave them as a practitioner, as well as the individual recognition associated with having research published as illustrated by the following quote:

P16: 'Erm...what would motivate them to want to be involved in research? Probably the fact that it's something that...like a project that could potentially be their idea and that they then take that through and then get it published and it's...er....theirs for life, isn't it? It's recognition for what they've done.'

Professional development as a driver was multifaceted. Gaining research knowledge and skills was cited as one example of how undertaking research could support professional development. However, professional development associated with research was not perceived to be limited to the knowledge and skills gained relating specifically to research. Reference was also made to transferable skills gained through research such as project management, objective setting, writing academically, presenting data, and giving oral presentations. Research contributing to career progression was also cited in the context of professional development which some attributed to the research expertise and/or transferable skills gained through having undertaken research. In the context of transferable skills, one participant made reference to these skills making individuals 'more attractive' to employers. Likewise, as an example of how having research expertise could support career progression, one participant made reference to the need for individuals to have research skills to attain a consultant pharmacist post. However, several interviewees with research experience were of the opinion that undertaking research had not contributed significantly to their personal career progression. Indeed, of all the individuals interviewed in the pharmacists group, only one participant talked about research personally benefiting their career but recognised that this was not the case for everyone.

P9: 'Em.. I mean it, it has linked into career progression and recognition...but I recognise that that's not always the case, and I think for me it's just sort of worked out quite well cause it complemented my teaching, my management, my clinical...'

Several were also of the opinion that rather than research being an essential requirement to attain a senior position, pharmacists could progress to a relatively senior role i.e. roles graded at Agenda for Change Band 8, without having undertaken research.

Linked to professional development being a driver to engagement, several participants in the pharmacists group suggested that a clear career pathway incorporating research would potentially encourage more pharmacists to undertake research. Clearer career pathways to senior positions combining clinical and academic roles to provide pharmacists with an alternative career path to that of the management route to chief pharmacist was specifically suggested by one participant as a way to increase research engagement.

P11: 'I think it's important they are able to see a career path and that it's a different, perhaps, career progression from the traditional career progression, but that it ends up in a position equivalent to a chief pharmacist. For me personally that's an important motivator because at the moment, I think there is some...people can visualise a career in clinical practice as a consultant pharmacist, but I think it's fair to say, they wouldn't be able to visualise a career pathway to a clinical academic professor position,, and for NHS clinical pharmacists to I think embark on these sorts of careers, it would be really valuable to have some established clinical academic professors who can demonstrate a successful career...'

Rather than research experience leading to career progression, several participants also talked about research increasing career opportunities. Changing to a career in academia was cited as one such way that undertaking research could increase an individual's career opportunities.

Many interviewees cited their personal research experience leading them to undertake further research. Research experience gained as part of a postgraduate qualification was commonly cited as the experience that had given them the desire to undertake further research. Interestingly, the majority of those interviewees who had been inspired to undertake further research as a result of gaining research experience through a postgraduate qualification, talked about a positive experience leading them to want to undertake further research in their careers. None said they had undertaken such qualification to gain research experience. Illustrating this, one participant described how they felt indifferent to undertaking research as part of a postgraduate qualification but later in the interview went on to describe how undertaking research as part of their qualification had led them to want to do undertake further research.

Some participants also described their experience of undertaking research as part of an undergraduate final year project and/or pre-registration project as sparking their interest in undertaking further research. Linked to this, the integration of research into the professional practice of early career pharmacists was suggested as a way to encourage pharmacists to undertake research during their careers. To illustrate this, one participant compared the foundation training of pharmacists to that of medics which, they believed, incorporated research:

P3: 'So I think it would really help if it [research] was in some way incorporated into a foundation training...training and development programme after qualification like for doctors. So they have to do some don't they? And that doesn't exist for pharmacists. If part of the foundation training, even just for hospital pharmacists, had to be a bit of research it would get done and everyone would do it, and everyone would know how to do it, and that would carry on through...'

A desire to change the practice of pharmacy to improve patient care at a strategic level was also commonly cited as a personal driver by those who participated in this phase of the research. This is illustrated by the following quotes from two participants who talked about research in the context of changing policy and practice:

P9: ‘...erm it’s about being able to change policy and practice around you know how we provide pharmacy services or how we work with other members of the healthcare team.’

P11: ‘...er I feel that it’s a natural progression from working in a clinical role and trying to improve the quality of care for individual patients, to working in a...at a more strategic role in improving care through guidelines and auditing and feedback, and then the next stage for me is to carry out research to understand how we can improve patient care even further, and to understand the impact of interventions.....and to me is the pinnacle of achievement...if you are generating new knowledge that will er inform and improve care of patients, not only at [the name of the Trust] but in other hospitals or even internationally that would be my long term goal.’

Interestingly, through the course of the interviews two participants from different case study sites made reference to published literature relating to research active organisations being associated with improved outcomes for patients:

P11: ‘...there is quite a bit of research around a growing body of evidence showing that hospitals that engage actively in research have better outcomes for patients, and that seems to be not just because of staffing, that its...or resourcing at these hospitals, that is because the staff there are more engaged and more determined to improve quality of care and work more efficiently, so I think patients probably...almost certainly benefit from having a research active workforce...’

P13: 'It's about quality of care and there are so many studies that have demonstrated if you have a research enabled workforce the quality of the care that you deliver is so much better, and that for me is a really big thing. It's just if you're all research enabled you're going to be way better at your jobs, just without even realising it.'

Although neither participant made any direct reference to their awareness of such research driving them to undertake their own research, the very fact that they mentioned these studies would suggest these participants had a personal desire to contribute to improving patient outcomes.

External drivers

In terms of external drivers for pharmacists to undertake research, the following themes were identified:

- The need for evidence from research
- Professional kudos
- Research being a professional expectation for pharmacists
- Research being an expected part of a pharmacist's role
- Organisational reputation
- Income generation
- Organisational culture
- Departmental leadership
- Having role models within the department

The need for evidence from research being a driver for engagement was cited in the context of there being a need for an evidence base for pharmacy practice. Reference was made to research being required to provide assurance that changes to pharmacy services were not

associated with negative or unintended consequences, as well as the need for research to provide evidence to use in business cases.

Professional kudos was also cited as an external driver to engagement as illustrated by reference made by some interviewees to an association between pharmacists undertaking research and professional standing.

P3: 'It puts us in a slightly higher standing...if we're doing research.'

P4: '...if we undertake research on a practice-level, I think that shows the profession in a really positive light.'

Proving the value of the profession was another reason cited for why pharmacists needed to undertake practice-based research in particular.

Reference was also made to research being a professional expectation driving engagement. One participant suggested that research being a professional expectation meant all pharmacists should be research-active.

P10: 'it's just an integral part of being a professional and everybody should be doing it.'

A requirement to undertake research being part of the RPS Foundation and Advanced Pharmacy Frameworks was also mentioned by several interviewees. However, some were sceptical about whether the inclusion of research in the RPS Advanced Pharmacy Framework actually drove activity. Illustrating this one participant questioned how well regarded the RPS Faculty membership was:

P1: 'So I think it's positive that it's in the Advanced Level Framework now for pharmacists but I don't know how much weight it carries and whether people just try and fudge it with audits...'

Likewise, another questioned how many pharmacists were using the RPS competency frameworks to support their professional development. Despite this, several participants believed that the RPS should have a role to play in driving research among members of the profession. The inclusion of a requirement to undertake research being made a compulsory part of professional practice was suggested by one participant as a way to increase engagement.

P3: 'I think it needs to be...driven more either by the professional body or...erm...as some kind of training programme, something needs to drive it to make it compulsory.'

Research being an expected part of an individual's role by their employer was also cited as a driver by several participants. One participant, who held the position of consultant pharmacist, cited the inclusion of research in their job plan as a reason why they had undertaken research.

P5: 'So it really came from the fact that actually I have to do it as part of my job...because it's part of the sort of makeup of a consultant pharmacist's post, I should be involved in research...'

Likewise, several of the chief pharmacists interviewed were of the opinion that research experience was an essential requirement for a pharmacist to attain a very senior position.

P3: 'I think that if you are more and more these days applying for a very senior position then you need to have something around research under your belt.'

P12: 'The other, the next motivation might be career development...and so increasingly having some sort of research track record is really required for higher level promotion, certainly within the hospital sector.'

Some participants also hypothesised that the inclusion of research in pharmacists' annual appraisals would drive research activity.

P2: '...perhaps if it was more integrated, perhaps in a PDR.. so it's always like how are you performing against that. If it's not there then why would people want to...want to do it? Erm..so you need some kind of carrot as well erm, because some people are naturally interested in doing research and they'll carry on and do it anyway regardless, but some people I think sit on the fence a little bit or are a bit unsure and if...if it was seen to be part of your performance or..then..then people would be yeah I'll do it.'

From an organisational perspective, pharmacists undertaking research was perceived to be good for the reputation of the department. One participant attributed research activity as raising the profile of the department nationally.

P12: '...departments with a strong research track record tend to have a high profile nationally.. erm and I think all that adds to the reputation.'

Having research published or entering posters to conference were cited as mechanisms to promote research activity outside of the Trust.

Participants were also of the opinion that having a research active pharmacy department was positive in terms of the reputation of the department within their Trust and also for the reputation of the Trust itself. Successful grant applications were seen as one way that research gave the department and the Trust kudos.

P2: 'Well I hope that because perhaps some of the work that we do gets out there and gets published or goes to conferences more often, that..that there's a reputation. I mean the [NIHR funded grant] that I've got is based here...er...as a site, so the money comes here as opposed to the University so..erm..and that has been, you know, put in the newsletter..and it gives something to the pharmacy department so we've actually got some research going on in [the name of the Trust], and I think that's a good thing for the organisation.'

Several also perceived that the prestige of having a research active department or a reputation for research would be attractive to potential employees and helped with recruitment and retention of staff.

P16: '...so if you're recognised as having a culture of research...it makes you quite an attractive place to come and work.'

Some also talked about the department having a reputation for research attracting high calibre staff.

P7: '...a department that undertakes research will be seen as a forward thinking, improving department and can therefore compete for the best pharmacists to come and work for them...'

From an organisational perspective, income generation associated with research grants was seen as a driver for research activity within pharmacy departments. In terms of other external drivers for research relating to the organisation, a pharmacy department having a culture for research was perceived to driving research engagement by several participants at their respective Trusts. Making research visible appeared to be the mechanism through which research was encouraged. Regarding the culture of the organisation at Trust level, although no participants made any reference to the culture at the level directly driving pharmacists to undertake research, one chief pharmacist believed that a requirement from the organisation for pharmacists to be research active would help drive research activity in their department.

P3: '...I think that would help, you know, if there was a driver from the organisation to say 'well what are you doing to contribute to research?'

The same participant also suggested that better recognition for pharmacy-led research at Trust-level would also drive activity among pharmacists.

As well as the culture of the department, the leadership of the chief pharmacist was also cited as driving or encouraging research activity among pharmacists within their respective departments. Indeed, several of the chief pharmacists interviewed appeared to recognise the importance or significance of their leadership in relation to encouraging research activity.

P6: 'I think the chief pharmacist is quite influential...bearing in mind that every level down within the organisation something gets filtered out em...you've got to be enthusiastic about it at the top.'

Interestingly all of the chief pharmacists interviewed appeared to value research and believe research to be important. For example, one chief pharmacist not only felt research was important to the department but also recognised that the department benefitted from research.

P6: 'How do I feel about it? I think it's really important, I think it's great to have, I think it gives us a lot of benefit that we wouldn't ordinarily have, I think if we had all the time in the world we'd do much more...'

Likewise, by saying that they wanted to put research at the 'forefront' of their department's core activities, another appeared to value research and perceive it to be important.

Having a pharmacist whose role was to lead research was credited with driving research by several interviewees, as illustrated by the following responses from two participants at different case study sites to being asked whether having a pharmacist in such a position influenced research activity among pharmacists within their departments:

P18: 'I think [having a lead pharmacist for research] is the key for us. I think [they] have been the driving force for the research agenda within our department.'

P5: 'I think it's a hugely positive thing. Erm... I think it just establishes that it's not something...we need to do a bit of research, let's try and find the time for it but we're often too busy. It gives a good focus. And I think that's part of, without having to sound like....saying how great your boss is, but I think that's one part of [the chief pharmacist's] vision that he's always wanted to have that because he's recognised that actually you need to give it a focus. You need to have someone to lead. And you need to, it just needs to be kept going. And I think that role just keeps it going.'

Several of the chief pharmacists had delegated leadership of research to a pharmacist in such a role in their respective departments.

P12: '...so I guess we rely on [the name of the lead pharmacist for research] to engage with people to try and promote development of research'

Having role models, i.e. research-active pharmacists within the pharmacy department, was also cited as a driver for pharmacists to undertake research.

P12: '...they need the inclination, sometimes I think in terms of developing that inclination they need to see erm role models...'

P7: '...there are a few of us in the department who are role models in terms of research, so seeing that will make them think I can be more like them, I think that's something that will encourage them.'

Interestingly, none of the chief pharmacists were undertaking research themselves at the time of the interviews, and none appeared therefore to be leading by example. However, three of the four lead pharmacists for research were actively undertaking research at the time of the interviews and were therefore acting as departmental role models. Indeed, the lead pharmacist at one site talked about how they felt that it was incumbent on them to be a role model and that having research experience gave them credibility.

P7: ‘...I have a significant role to play in influencing the culture...er so I need to be a role model and that’s why I’ve been doing my own research, I have to have erm.. the fact that I’m doing my own research gives me credibility in research...’

8.2.2.2 Drawbacks

A summary of the findings regarding the themes identified relating to drawbacks is presented in Table 14 below, which is then followed by a more detailed analysis of the data relating to each theme by subcategory.

Table 14: Summary of the themes relating to drawbacks

Theme subcategory	Theme	Description of theme
Personal drawbacks	Reduced income	Reduced income associated with salaries to undertake a PhD being lower than that of pharmacists’ NHS salaries and lower financial remuneration associated with academic careers
	Short contracts	Short contracts associated with academic research
External drawbacks	Impact on service delivery	Having pharmacists in a department undertaking research taking resource away from delivering clinical services
	Difficulty in backfilling posts	Short time scales associated with funding from grants being awarded and funding from grants not being sufficient to cover an individual’s full salary making it difficult to backfill posts to allow individuals with grant funding to undertake research

Personal drawbacks

Two themes were identified relating to personal drawbacks:

- Reduced income
- Short contracts

Lower incomes associated with funding for PhDs was cited in reference to reduced income being a drawback to pharmacists undertaking research. One participant suggested that because pharmacists were paid comparatively higher salaries than other healthcare

professionals, the reduction in income associated with undertaking a PhD would represent a more significant reduction in income for pharmacists. Lower financial remuneration associated with academic careers was also cited as another potential drawback for pharmacists looking to pursue a career in academia.

P10: 'Erm...I don't think it's necessarily well, er recompensed....academic careers don't always attract huge salaries so if somebody wanted to use it as a er route through into an academic career it's not necessarily a career path paved with gold.'

Short contracts were also cited as a personal drawback in the context of undertaking academic research, illustrated by the following quote from one participant:

P2: '...if you are a researcher the whole going from one project to another is very unsettling and not knowing where the next job is coming from isn't a nice way of living, especially as you get a bit more mature and perhaps you've got a mortgage and stuff...'

However, some interviewees who had been employed to undertake research through such contracts, talked about their ability to undertake locum work as a pharmacist to counter the risk of being out of work at the end of their contracts.

External drawbacks

Two themes were identified in relation to external drawbacks, both of which related to the organisation:

- Impact on service delivery
- Difficulty backfilling posts

External drawbacks were cited in the context of the impact on service delivery of releasing staff to undertake research both in terms of the immediate day-to-day impact of pharmacists

undertaking research activity during the working day, and in relation to the difficulty of backfilling posts from grant funding.

The impact of research on service delivery was cited as a drawback by several of the chief pharmacists interviewed. To illustrate this point one chief pharmacist highlighted how infeasible it would be to allow all pharmacists in their department protected time to undertake research while delivering the core pharmacy service.

P3: 'Er, the only drawbacks are, I think from a purely practical point of view, it could distract and take away from actual service delivery...so I can't afford for all my pharmacists to have a day a week dedicated to doing research for example, because the organisation requires us to dispense [discharge medicines] within an hour..so I can't do it all.'

The challenges associated with backfilling posts to allow pharmacists the time to undertake research funded through grants related to both the difficulty identifying staff to backfill posts because of short time scales associated with funding being awarded, and the difficulty of backfilling posts where the funding awarded by a grant is only sufficient to cover a proportion of an individual's salary. Interestingly, one participant perceived difficulty backfilling posts through research funding had negatively impacted on their career progression as they felt applying for funding to undertake a PhD had held back their progression from a role graded at Agenda for Change (AfC) Band 7 to a Band 8a because of anticipated difficulties in backfilling their role at a more senior level.

P1: 'I think it's held me back em...applying for higher banded jobs..I feel like they held me back at a Band 7 because there was this feeling that if I applied for 8s and then got funding for the PhD that they wouldn't support it, whereas if I stayed where I was they weren't too bothered as I was easier to replace as a Band 7 than if I'd got an 8.'

8.2.2.3 Barriers

A summary of the findings regarding the themes identified relating to barriers is presented in

Table 15 below, which is then followed by a more detailed analysis of the data relating to each theme by subcategory.

Table 15: Summary of the themes relating to barriers

Theme subcategory	Theme	Description of theme
External barriers	Resource: lack of time	Lack of time to undertake research due to demands of the day job compounded by research being time consuming to undertake
	Resource: difficulty obtaining funding	Difficulty obtaining funding both in terms of the time consuming nature of grant applications and the highly competitive nature of awarding of grants; lack of pharmacy-specific grants
	Resource: difficulty accessing support	Difficulty accessing support associated with difficulty accessing individuals with research expertise within the Trust and difficulty accessing infrastructure
	Organisational culture	Lack of priority assigned to research; unsupportive chief pharmacist and unsupportive middle managers at departmental level
Personal barriers	Lack of competence	Lack of research knowledge and skills cited as a barrier to pharmacists undertaking research
	Lack of confidence	Individuals lacking confidence in their ability to undertake research
	Lack of awareness and understanding	Individuals lacking an understanding and awareness of research, lacking appreciation of the benefits of research to pharmacy practice, and lacking an appreciation of the personal benefits to themselves from undertaking research

External barriers

External barriers fell into two broad themes:

- Resource issues
- Organisational culture

With regards to resource issues representing barriers to research, participants' attitudes and opinions relating to this fell into three groups or sub-themes: lack of time, difficulty obtaining funding, and difficulty accessing support.

Lack of time was commonly cited as a barrier so much so that it appeared to be the most significant issue preventing pharmacists from undertaking research. Competing demands of the day job was cited by many as the reason why pharmacists lacked time to conduct research.

P17: '...the everyday demands of clinical practice means there is no time.'

P6: 'I think it's the pressures of the day to day job...there is no downtime, there is no slack...'

This appeared to present more of a barrier to undertaking research for those in more junior roles with several participants in relatively junior positions, i.e. roles graded at AfC Band 6 or 7, describing how they had personally experienced difficulty finding time to undertake research because of the demands of their clinical commitments.

P1: '...I didn't have the time to do it because it was very much like 'You need to be on the wards' and I think that was very much because of being like a Band 7 and because being like a prescriber they're quite keen for you to do just that.'

Compounding the issue of a lack of time to undertake research was the perception that research was itself time consuming to undertake.

P4: '...all the preparation, I mean you'll know Julie in terms of the preparation for research design, how much time that takes [] I think that's why people may get discouraged.'

Long timeframes associated with obtaining research ethics and governance approvals appeared to be an aspect of the research process perceived to be a particular barrier.

P2: '...and then the whole thing about ethics committees and what the requirements you need are.....it takes so much time and that just puts people off doing it in the first place.'

Changes made to the process for obtaining ethics and governance approvals to conduct research was cited as contributing to the time consuming nature of research, and reference was also made to the research approvals required for some studies being disproportionate to the level of risk associated with them.

In relation to difficulty obtaining funding representing a barrier to engagement the difficulty obtaining grants in particular was cited. Issues with obtaining grants included the time consuming nature of the application process and the competitive nature of the awarding of grants resulting in high failure rates for applications. Many perceived these issues to compound one another in that the high failure rates associated with applications led participants to believe that the time spent on unsuccessful grant applications was wasted.

P11: '...you can put a lot of effort into grant applications and be unsuccessful...and that's very difficult to accept professionally and personally, and it seems like a very inefficient and wasteful way of spending time, and spending precious taxpayers money so I think that the greatest problem for me with research is the lack of guaranteed funding...'

P17: 'I do think the biggest barrier is the funding equation.... I think it's very hard to get financial resources. I'm of the opinion it's a hugely inefficient process. The failure rate I think is 1 in 8 to get a shortlist, and 1 in 3 to get through the process. To me that's a huge amount of time and wasted resource for all those who didn't get the grant.'

Needing to have a track record in research in order to be awarded research grants was identified as contributing to the difficulty associated with obtaining funding as illustrated by one participant describing the need to have research experience to be successful in applying for funding as a 'catch-22'. Another illustrated this by making reference to the inclusion of individuals with an academic track record on their grant applications increasing the likelihood of applications being funded.

P3: '...research credentials to get... get grants, for better success with grants, you've got people who've been successful before and done a lot of research, that helps.'

A lack of pharmacy-specific grants was identified as another barrier as illustrated by the following quote from one participant who believed more specific funding for pharmacists would facilitate research engagement:

P5: '...having more pharmacy specific funding opportunities erm the competition is massive, very intense, er so knowing there was perhaps an easier route to getting funding or less competition.'

Difficulty accessing support was cited by several participants as a barrier to research activity in the context of resource issues being barriers to engagement. Difficulty accessing individuals with research expertise within the Trust was identified by participants at different case study sites as a barrier that they had personally experienced. This was illustrated by one participant who described difficulty obtaining internal support from their Trust R&D department due to it

being aligned to supporting clinical trials rather than the types of research they were undertaking:

P13: 'So when I first started undertaking my research here I did struggle because they [the Trust R&D department] were built for big projects, largely clinical trials...'

Difficulty accessing infrastructure was also identified as a barrier to pharmacists undertaking research. Examples of such included access to IT software packages used to assist with both statistical analysis of data and qualitative data analysis.

In terms of organisational culture representing a barrier to engagement, a lack of prioritisation at departmental level was cited by several interviewees as preventing engagement. Illustrating this was the view of one participant who hypothesised that if research was given a higher priority at departmental level then individuals would find time to undertake research.

P8: '...if there was a higher priority coming from a...the top on research they would make time when pharmacists weren't on wards, weren't on their clinical duties to do research projects.'

Research not being seen as a core part of pharmacists' everyday duties was also perceived to present a barrier as illustrated by the following quote from one participant who described a need for pharmacists to be 'released' from their duties to undertake research:

P13: '...the day to day functions of pharmacy as a job just don't allow that without being released to go and do it.'

Expecting pharmacists to undertake research in their own time was also perceived by some to represent a barrier to research engagement as they felt this expectation would discourage individuals from undertaking research.

P18: '...if you've got a full-time job, quite often in clinical pharmacy in hospitals you know, you know it's not a 9 to 5 job really, a lot of people put in a lot of overtime so to do a degree or a course in your own time on top of what you're already doing, I think that would probably put people off.'

Also in relation to organisational culture, having a chief pharmacist who was unsupportive of research was perceived by some to present a barrier to engagement. This is illustrated by the following quote from one participant who believed that an unsupportive chief pharmacist would prevent engagement:

P11: 'I hear stories of chief pharmacists who don't support research, maybe feel threatened by research and don't really actively encourage it and I'm sure that means it's very hard for any pharmacist or pharmacy staff who are interested in research to get involved, just probably too intimidating the idea of starting up without the chief pharmacist's support, so I think its deal breaker if you don't have it.'

Having unsupportive middle managers was cited as a barrier. One participant appeared to attribute their personal experience of this to their line manager not perceiving research to be of value to the organisation.

P13: 'So people just don't get it. Erm my line manager when I've asked to go to conferences and things like that, she goes 'well it's just the research...I don't see how the Trust benefits from that.'

Personal barriers

Participants' opinions of personal barriers to pharmacists undertaking research fell into three themes: lack of competence; lack of confidence; and lack of awareness and understanding.

In relation to lack of competence, a lack of research skills was specifically identified which some interviewees perceived to be endemic among members of the profession.

P11: '...I think pharmacists generally feel a bit deficient in research skills, we're taught quite well to critically appraise literature, but it's different evaluating someone else's work than actually generating research yourself, developing a protocol, designing a research study that's going to be good quality and deliver the correct results and also applying statistical analysis, and most pharmacists would confess to feeling not very, well not very capable of doing that sort of thing, so that's a major barrier.'

Difficulty formulating a research question and not knowing how to get started in research appeared to be particular issues which participants made reference to in the context of pharmacists lacking research knowledge and skills as illustrated by the following quote:

P13: '...it's difficult to get it off the ground and I think that's what most of my colleagues out there would say is just 'How do I get started? How do I get the time out? How do I get everything in place?'

Although not a skill required solely for research, participants also said that the need to be able to write in an academic style presented a barrier to pharmacists undertaking research. Indeed several of those interviewed said that learning to write in this style had been a barrier they had needed to overcome.

Some participants believed pharmacists to lack the competence to undertake research because the undergraduate course did not equip them with the necessary skills to lead their own research.

P9: '...it's a massive learning curve when you first start, and I think unless you've done it as part of a postgraduate qualification, like a formal postgraduate masters or a PhD, I think it's really hard to start.. I don't think the undergraduate MPharm projects...they give you a tiny taste of it but they're typically you know audit projects and very basic things.'

One participant appeared to hold a slightly divergent view. They appeared to perceive pharmacists to have a latent ability to conduct research due to them developing a scientific approach to inquiry as a consequence of practicing evidence-based medicine.

P4: '...well I think in terms of the healthcare scientists, they've got, or they should have, a sort of scientific approach, they should be rational in terms of any evaluation that were used for medicines that's based on the premise of research...so it makes sense because of that underpinning knowledge and that sort of pedigree they've already got, or should have, some underpinning that enables them to ask those questions in a rational way.'

In terms of pharmacist lacking confidence presenting a barrier to engagement, several participants directly referenced pharmacists' lack of confidence in their ability to undertake research so much so that some felt that pharmacists would be fearful of undertaking research.

P2: 'I think people...er...can be scared of research.'

Reference was also made to pharmacists perceiving research to be too difficult or complex to undertake.

P5: '...they think it's too hard to do research and it's too fiddly...'

Regarding pharmacists lacking an awareness and understanding of research preventing engagement, several aspects to this were identified. There was a perception among interviewees that members of the profession fundamentally lacked an understanding of what constituted research illustrated by participants describing research as something that needed to be 'demystified'. Several participants also believed there to be a lack of understanding of the different forms of scientific inquiry among members of the profession. However, those interviewed appeared themselves to be able to distinguish between audit, service evaluation and research. Some also referenced quality improvement as another form of inquiry used

within their organisation in the context of bringing about improvement and were able to distinguish quality improvement from other forms of inquiry. Despite appearing to be clear on the difference between the different forms of inquiry, some interviewees still appeared to feel that it was only research that could be published or presented at a conference. The term 'research' also appeared to be perceived by some interviewees as an 'umbrella' term for all forms of scientific inquiry and in particular by those in the chief pharmacists group.

P10: '...I think [research] in its broadest terms is just about inquiry...'

Rather than perceiving research to be an umbrella term, some appeared to perceive there to be step-wise progression from audit to service evaluation to research.

P4: 'So it goes through from a bit of an audit, to a bit of practice development... business case development, then through to you know a more formal evaluation.'

All those interviewed also appeared to differentiate between pharmacy-led research and pharmacy involvement in clinical trials delivery. One participant also made reference to involvement in research delivery as principal investigators for multi-centre studies. Again they appeared to be able to differentiate between a pharmacist undertaking the role of a principal investigator for a study and a pharmacist being a chief investigator leading their own research. Their perception, however, was that this understanding of the difference between chief investigators and principal investigators was not widely shared within the profession.

Lack of understanding or appreciation of the value or benefits of research to pharmacy practice was also identified as a factor presenting a barrier to engagement. One participant exemplified this in describing a situation they had witnessed where a pharmacist in the audience of a conference presentation did not appear to appreciate how research was used to inform practice.

P15: ‘...what this pharmacist saw was two million pounds being spent on proving something that she did every day, and what she didn’t get was this is an RCT, this is something that when published, NICE will be able to use in policy and guidelines and all that.. and I think if you don’t understand that, then you just see a waste of money and why would they bother engaging.’

It was interesting to note that the same participant elsewhere in the interview also appeared to question why pharmacists were not as research active as perhaps they would be expected to be considering how embedded the use of evidence-based medicine is among the profession.

P15: ‘We’re such a... you know... evidence-based profession and we talk about evidence-based medicine all the time...we’ve pushed evidence-based guidelines for so long, yet conversely, we don’t do as much research as we should do...’

One of the chief pharmacists interviewed appeared to perceive the lack of appreciation of the value of research to pharmacy practice to be at least in some part attributable to pharmacists not being familiar with the types of journal where academic research is published. They believed pharmacists were most likely to read professional journals but recognised that the aim of those undertaking research in academia was to publish in high impact factor journals. They appeared to suggest therefore that because the outcomes of research were not effectively disseminated to those in practice, pharmacists lacked an appreciation of the value of research to practice due to a lack of awareness of the outcomes of research being undertaken.

Rather than pharmacists lacking an understanding or appreciation of the value of research, some participants appeared to question the value of academic research. For example, one participant talked about academic research having ‘no practical application whatsoever’.

Lack of awareness of research was also cited as a barrier which is illustrated by the following quotes from two chief pharmacists who appeared to recognise the need to promote the research undertaken within their respective departments:

P3: '...we always share the research people are doing, and we could probably do more on that...cause at the moment we've got our, I was just thinking about this after our Trust away day last week, actually we've got our pharmacy R&D board, but the only people that come to that are the people who are already engaged, and actually we should promote that and share that wider so that everyone else knows what's going on.'

P6: '...we have a noticeboard up in the department that's research, but this was something I did discuss with [the name of the Lead Pharmacist for research] when I did my last 1:1, is how do we make it more mainstream in the department and how do they know what [you] do?'

Lack of awareness of research opportunities was also seen as a barrier and is illustrated by the following quote from a participant who believed pharmacists were not aware that they were eligible to apply for NIHR clinical academic careers programme fellowships:

P11: '...one thing that has I think dramatically helped is the NIHR opening up clinical academic posts to pharmacists as a profession [] so what it means is that a pharmacist who's embarked on a clinical career and is paid on agenda for change pay scales, they have the opportunity to do a masters in research or a PhD and carry on to post doc research without losing their salary, so their salary is 100% backfilled and I think that's an important incentive and I don't even think it's fully appreciated by pharmacists working in the health service at the moment...'

There was also a widely held view among participants that the RPS should or could have a larger role to play in terms of raising awareness of available grants and other funding opportunities available to pharmacists as illustrated by the following quote:

P1: 'I think the RPS could certainly do more, I think they're trying, but at the same time they're... they have a research group and they don't even advertise like funding calls that are open to pharmacists. I've been talking to a few funders like Arthritis UK, Dunhill that fund me, and they're just like we don't get any applications from pharmacists, and I'm like they probably don't even know you exist. Whereas other professions like the NMC are quite active in promoting calls and stuff. So I think the professional body needs to do more em...to advertise research, advertise the opportunities available and advertise the point of doing it em...'

Lack of appreciation of the personal benefits of undertaking research among members of the profession was also identified as a barrier to engagement. However, rather than pharmacists lacking an appreciation of the personal benefits to research engagement, some believed there to be insufficient benefits to encourage engagement. Lack of recognition of research in terms of career progression was also perceived to be a barrier to engagement with several making reference to a lack of recognition of research in the career structure of hospital pharmacists.

P17: 'It's just not recognised in terms of career structure and salary...there is nothing.'

P8: '...the NHS, it's very much centred around clinical skills, the NHS Agenda for Change, and management skills.. and I don't really feel like there's room to recognise my research skills within the structure.'

One participant illustrated this by comparing the lack of career path for pharmacists to that of other healthcare professions who they saw as having more defined career pathways for those with an interest in research.

P14: 'I think if there was a better structure erm..for sort of getting involved in the first place like the medics have really, and the nursing sort of colleagues as well, if there were a sort of set pathway or just for it to be more accessible I think would be a massive benefit.'

8.2.2.4 Enablers

A summary of the findings regarding the themes identified relating to enablers is presented in Table 16 below, which is then followed by a more detailed analysis of the data relating to each theme by subcategory.

Table 16: Summary of the themes relating to enablers

Theme subcategory	Theme	Description of theme
External enablers	Resource: having time	Having time in the day job, with integration of research into job roles and job plans and pharmacists having protected time in their role cited as ways to facilitate this
	Resource: obtaining funding	Obtaining funding from research grants to allow individuals time to undertake research through their roles being backfilled; RPS having a larger role to play in providing pharmacy-specific funding
	Resource: access to support	Being able to access individuals with research expertise through having individuals with research expertise either within the organisation or through links with academia; and having access to infrastructure to support research activity such as access to software packages and library services and having physical space away from distractions
	Organisational culture	Having a departmental culture for research; having a supportive chief pharmacist and supportive managers
Personal enablers	Resilience	The need for pharmacists to be resilient to undertake research cited in the context of participants describing research as being demoralising
	Self-motivation	The need for individuals to be personally motivated to undertake research
	Questioning mindset	Having a questioning mindset perceived to be a personal quality suited to undertaking research
	Competence	Having research knowledge and skills; postgraduate research qualifications and access to in-house, external training and integrating research into pharmacists' postgraduate clinical training suggested as a way for pharmacists to gain requisite skills to conduct research

External enablers

External enablers fell into two broad themes:

- Resource
- Organisational culture

Regarding resource being an enabler to research engagement, participants' attitudes and opinions fell into three groups or sub-themes: having time, obtaining funding, and being able to access support.

Having time was cited as an enabler to research in the context of pharmacists having time to undertake research in the working day. Having time to conduct research was perceived to be an important enabler, illustrated by one participant who described this support as being 'vital'.

P11: '...support from the hospital, giving me time to write grant applications and carry out the research, that's been really vital.'

Integrating research into their job plans was cited by several interviewees as having personally enabled them to have time within their day job to undertake research.

P7: '...er so the support has been er from my job profile you know, it's the one thing that has been put on my appraisal, you need to have a PhD.. so I've had the support in that I've had the time out to do it.'

The inclusion of research in consultant pharmacist job plans was also cited in the context of research being part of a pharmacist job plan and thus allowing pharmacists in such positions time to conduct research. However, there was a perception that not all consultant pharmacists were research active as illustrated by the following quote from one interviewee who was in a consultant pharmacist role:

P5: '...although to be fair, if you look over the years looking at consultant pharmacist colleagues, the research output is variable. And I think because nobody has the same job, so some people have jobs that have lent themselves to some very nice bits of academic collaborations and some good bits of work.'

Likewise, another participant appeared to be of a similar opinion as they referred to research as a 'token gesture' in consultant pharmacist posts and appeared to imply therefore that not all consultant pharmacists were research active.

P8: '...you don't really see it in job descriptions you know as you go up the bands, maybe as you get to consultant it's in there as a sort of token gesture it seems because the consultant post has to have it in there I think, like 10% or something of their time.'

Integrating research into pharmacists job roles was also cited as a mechanism by which pharmacists were allowed time in the working day to conduct research. Combined clinical academic appointments were cited as examples of how research could be integrated into pharmacists' job roles and several of those interviewed had such appointments. However, despite having such a role, one participant talked about how they still had difficulty protecting their time to undertake research due to clinical commitments taking priority.

P11: '...it can be difficult to juggle a clinical role, a demanding clinical role with research... often deadlines can conflict and it's difficult to ring fence time that would be protected for one role or another...often there are interruptions from the clinical side or from the academic side...'

Employing pharmacists with research as their primary role was also cited as facilitating engagement. Research being the primary purpose of their role was perceived by those in such roles as supporting them to undertake research. This is illustrated by the following quote from

one participant who appeared to imply that being employed in such a role meant that the clinical service offered by the department did not take priority over their research activities:

P18: 'Well, I'm in a research role, that's a major support in itself erm...without having a manager that has created a job for me to actually be in, you know, we would be doing research as part of our clinical duties, you know research would be a small part of your work whereas research is the main part of my job.'

Other participants not employed in such roles were also of the opinion that having posts where research was the primary role of the individual would enable research activity. One interviewee made reference to a different Trust to that in which they were employed where they perceived research to be the full time role of several pharmacists as an example of where this model had been successful elsewhere.

P13: '[name of Trust] have a research institute as part of their service design, and as part of their research institute they have three pharmacists, three full time research pharmacists who do a bit of clinical but primarily research, and they do all the research in the department which leaves the clinical experts to carry on and do that..so there's the infrastructure there that isn't here...but we need to start building that infrastructure in some way.'

In the context of pharmacists having time to conduct research in the working day, having a senior position within a department was also cited as a facilitator due to pharmacists in more senior roles having autonomy in terms of how they managed their time. This was illustrated by the following quote from one chief pharmacist who believed research-active staff in their department to be of a level where they could 'make the discretionary time needed to do it':

P6: '...I expect they're of a level that they can make the discretionary time needed to do it...'

However, at one of the case study sites, pharmacists were allowed to undertake research, regardless of their grade, if the research they were undertaking aligned to the departmental business priorities. This represented another mechanism through which pharmacists were afforded the time to conduct research during the working day. Undertaking research as part of postgraduate qualification was also seen by some participants as another mechanism through which they had been allowed time to undertake research as part of their working day.

P5: 'So I think it would be interesting that if you change my diary and carve out a day where I was just doing research for a day, I think looking back when I did my masters and I had time from the department to do that.'

Several participants also cited protected time to undertake research as having the potential to enable research engagement. To illustrate this several interviewees drew comparisons between pharmacists and medics, who they perceived to have protected time which allowed them to undertake research.

P4: '...and when I compare it to medicine they will have their established senior registrar posts some of which, yes, you've got some clinical sessions but you've got some dedicated time.'

P3: '...there's not the same protection as for doctors around academic stuff for pharmacists, so there is no protected time or allowed time, it has to be begged, stolen and borrowed from somewhere to do it.'

Research funding was also cited as facilitating research engagement in the context of individual grants or fellowships enabling posts to be backfilled thus allowing the individual awarded the funding the time to undertake the research for which the funding was awarded. Illustrating this several of the chief pharmacists interviewed made reference to allowing staff to undertake research if they obtained funding to backfill their post.

P3: 'So we try and erm...I guess permit it if you like by saying 'yes we will backfill'...we don't say 'no you can't do it because we can't backfill your role. If they get funding we'll...we never say no you can't do it.'

P12: '...we would always try and encourage [managers] to release staff to be able to do research activities, funded research activities, and so we're quite happy to be flexible if someone wanted to go part-time, you know, we would be happy...we've never refused anybody the opportunity to do that'

Medical charities were cited as examples of funding sources for research as were grants from Health Education England. NIHR Research Fellowships were also cited as examples of sources of funding. Several also made reference to internal sources of funding allowing pharmacists to have their time backfilled to enable them to undertake research with internships offered by the Trust given as an example.

To overcome the lack of pharmacy-specific funding opportunities identified as a barrier to research (see section 8.2.2.3) several participants suggested that the RPS should identify more pharmacy-specific research funding.

In terms of access to support enabling research engagement, access to individuals with research expertise within the department was cited by several as a facilitator to pharmacists undertaking research. Developing research ideas and putting together grant applications were cited as specific examples of types of support that having individuals with research expertise in the department provided, as were help with writing conference abstracts and journal publications. Signposting to support outside the department was also cited in reference to having a lead pharmacist for research suggesting that in terms of having individuals with research expertise within the department being an enabler, their support was not limited to

their knowledge and skills related to the research process, but also encompassed their wider understanding of the system of support available to researchers.

Academic Practice Units (APUs) were cited as a mechanism through which staff were able to access individuals with research expertise within their department, as illustrated by the following responses from chief pharmacists to being asked how they felt having an APU influenced research activity within their department:

P6: 'Erm... I think people who are thinking about research have got people to go and talk to about it, I think people who have got research ideas can go and bounce them off people, I think if somebody's interested in [undertaking research] we've got an invaluable set of knowledge that they can just drop somebody an email and you know have a conversation with if that makes sense, erm.. and some people come from their pre-reg year knowing that they want to do a PhD, erm.. they've got that seed inside them that says I want to do research erm... but erm... erm... so I think if they've got an inkling they can find somebody to go and speak to, whether they would find somebody to speak to whether we would have local expert knowledge, I don't know, they probably would actually erm... but erm... erm... yeah, I think it's just local easy access to people who do research who can talk about research and help you.'

P3: '...it enables pharmacists when they have a research idea and don't know where to start, they know there's an expert in the department.'

Likewise departmental research forums were also cited as providing mechanisms through which individuals were able to access research expertise within the department.

Having individuals with research expertise in the department was also cited as providing support through more formal mechanisms such as mentorship and research supervision, illustrated by the following quote from one participant who perceived identifying individuals

able to offer this support to be a challenge for those employed in departments without individuals with research expertise:

P11: '...finding research active colleagues who can mentor or supervise is a challenge, not every department... we're lucky [here]...I think any pharmacist who chooses to embark on this journey has a number of people they can go to...'

Departmental research forums and the presence of research-experienced staff in the department were also cited as supporting research through individuals having peer support as illustrated by the description of the function of the research group in their department offered by one interviewee:

P14: 'So from my perspective it's a good opportunity to meet up with likeminded pharmacists...it's good to meet up, hey what's going on around the rest of the pharmacy and sort of contribute if we can towards helping others if they've got issues, if they've got problems.'

Undertaking research as part of a postgraduate qualification was also cited as providing individuals with support to conduct the research element of their qualification.

Access to infrastructure through academic links with universities was mentioned in the context of access to support enabling research activity. Examples given of infrastructure provided by universities included access to software packages and library access.

P11: '...the university provides all the software I need and the library access which is more than the hospital can provide...so statistical analysis software, the reference managing software, the qualitative research software, and the library access is better than the NHS library access so all the structures are there.'

Reference was also made to access to the facilities available in universities and to the research expertise not available in the department such as support with statistics.

P3: '...so it provides...erm things that we haven't got like experts in some of the, you know, statistics and it's provides us with pharmaceutical labs that we haven't got, so erm... facilities and expertise really that we haven't got.'

Universities providing physical space outside of the department was also cited by several as enabling them to undertake research due to there being fewer distractions and interruptions compared to their Trust-based departmental offices.

P13: 'I get an awful lot done when I'm at the University because I'm not distracted, and that's something else, it is very difficult to commit a block of time to a single project while I'm here [at the Trust] because of the milieu of day-to-day clinical care delivery, it's impossible for me to get a day off the rota.'

P11: 'It's also important to have a quiet place to go and work in and a computer that works, and is fast, I know that sounds like detail, but if it's not present it just makes everything so much more difficult. I've got a university office, there's only 4 other people in that office, it's a quiet environment, I can do thinking, I can be really productive and write reports, write manuscripts...'

In addition to academic links providing support, one participant also made reference to the support offered by the their local NIHR Research Design Service in relation to an application they had submitted for a research grant.

P11: '...the support for designing good grant applications and rehearsing for grant interviews with the Research Design Service, that's been fantastic...'

Regarding organisational culture being an enabler to engagement, having a culture for research at departmental level was regarded as enabling research engagement. Several participants cited the need for the culture to be supportive of research as illustrated by the view of one chief pharmacist who believed individuals would experience difficulty undertaking research if the culture was not supportive of such activity.

P10: 'I think if you're a jobbing pharmacist working in an organisation and the culture isn't there within the service then it must be bloody hard work, well virtually impossible.. where would you go for support? What would you do in terms of finding time... you know that would be a hell of a challenge for someone who's massively motivated to do that work [research]...if the organisation doesn't support it.'

Key to developing or creating a research culture appeared to be the leadership of the chief pharmacist. Indeed one chief pharmacist interviewed appeared to believe it was their role to develop a culture that was supportive of research.

P10: 'I see my job as erm being required to make the right environment within which people can develop, and people can develop in the way and deliver good stuff er, they don't have to be pushed that hard to do it because the environment's there to support them...'

Another chief pharmacist appeared to refer to developing a research culture by saying they wanted staff to feel supported to undertake research.

P3: '...by making sure that people know that it's okay and the department does support it, and we will allow it, and we will help.'

Rather than seeing their role as developing a research culture per se, several also saw their role as facilitating research activity by supporting their staff by allowing them to undertake research. One chief pharmacist illustrated this by making a clear distinction between

supporting research by enabling research to take place in the department and being able to support through having research expertise themselves.

P6: '...am I a source of ideas for research...no, am I knowledgeable on how to do research...no, could I be a facilitator for people to do it, I hope so, yes.'

Another chief pharmacist appeared to be of the opinion that giving pharmacists the opportunity to undertake research was so important that it was incumbent on chief pharmacists to support it.

P12: 'I think it's beholden on them [chief pharmacists] as part of them being a professional leader to make sure that their team have the opportunity to go and do the research, and give them, promote to them, the opportunities within the organisation that there might be to follow up funded research opportunities.'

However, it was not only chief pharmacists themselves who recognised the role of their leadership in supporting research activity, as other participants at all four case study sites also perceived having a chief pharmacist who supported research was essential for research activity. Several participants also made reference to the chief pharmacist needing to value research.

P5: 'I think we're very lucky with [the name of the chief pharmacist] that [they are] a very forward thinking person. [They] see the value of being seen as having an academic department and, and you know, an academically active department where people do research.'

P4: 'I think that's down to [the name of the chief pharmacist] as chief pharmacist because [they've] got that ethos...and if the chief pharmacist doesn't have it, and they don't see the value in it, I don't know that anything would develop.'

One participant was of the opinion that organisational culture and departmental leadership to be the most significant enablers of research activity among pharmacists.

P13: '...I think that's the biggest enabler is your leadership [the leadership of the chief pharmacist] and the culture within the organisation...'

However, it appeared that it was not only the chief pharmacist who needed to be supportive of research, as several participants cited the need for support for research to extend to the wider management team, as illustrated by the following quote:

P9: '...a lot of that [the research culture of the department] is about the leadership and the capability of the seniors, and if they don't know how to do research or why it might be valuable they're not going to pass that down culturally.'

Several participants made reference to the support they had received from their line manager having enabled them to undertake research.

P11: '...the support has been from my line management in the hospital encouraging me to continue and accepting it would take time and the managers being patient and encouraging, that's been absolutely vital, if we would have had a constant struggle against managers who didn't agree with the strategy I don't know if I'd still be doing it, so support from line management has been critical.'

P17: 'I've had, I've been lucky to have a chief pharmacist and a clinical pharmacy manager who've been willing to let me do it in terms of time out of the system and the opportunity to get it resourced by the department.'

However, both were in senior positions, so their line managers in turn would in all likelihood have been part of the departmental senior management team.

Interestingly, one of the chief pharmacists interviewed perceived it to be their role to ensure line managers in their department were supportive of individuals undertaking research.

P3: 'I think generally it's just encouraging and allowing, and enabling it to happen. So if there's an individual line manager saying 'no we can't do it, we don't have the time' actually resolving those barriers.'

Regarding the culture being supportive of research, interviewees, when asked how they had been personally supported to undertake research, used language which suggested that they felt they had been permitted or allowed to undertake research, rather than being actively encouraged to do so.

P13: 'Erm... well the support of my employer has been to allow me to do it.....so just them allowing me to do that [undertaking a postgraduate qualification] and develop myself has allowed them to, you know, they've shown they're happy to invest in me and give me the time of day basically and that's the most important bit of support they've given me.'

Some participants therefore believed that having a culture where research was allowed or permitted was an enabler in itself.

Regarding the research culture of organisations at Trust level, some perceived this to have a role in enabling research activity among pharmacists by suggesting that the Trust having a research culture made it 'easier' for pharmacists to undertake research.

P16: 'So this trust I work in has a very positive culture about research. So that just makes it so much easier to get involved....'

Personal enablers

Participants' opinions of personal enablers to pharmacists undertaking research fell into four themes

- Resilience
- Self-motivation
- Questioning mindset
- Competence

Regarding resilience, several participants were of the opinion that pharmacists needed to have a certain degree of resilience to undertake research. One participant talked about needing to be resilient in the context of dealing with the disappointment of unsuccessful grant application.

P7: '...that's one of the things that puts people off, that being, you know, failure in terms of getting a grant.... so needing to be resilient.'

Comment was also made that undertaking research was demoralising, with unsuccessful ethics applications and attempts to get research published cited as examples of how research could be perceived as such.

P9: 'I think sometimes people feel knocked back, you know at the start you don't get ethics approval for something, you write up your work for publication and it gets rejected [] and I think sometimes that can feel quite demoralising...'

Research findings not being translated into practice was another reason cited as to why pharmacists could find research demoralising.

P16: 'I mean some people like me get demoralised if they do a bit of work and it doesn't lead to anything.'

Research being perceived as demoralising also suggests that resilience is a personal attribute which would help an individual to conduct research. References made to the multiple barriers individuals needed to overcome to conduct research, similarly suggested that resilience was a personal attribute required to undertake research.

P4: '...unless you're really determined if you come across a series of barriers and then you've got competing priorities, are you really going to expend an awful lot of energy to try and overcome those barriers when you've got the day job to do or not enough hours in the day anyway...I think inevitably people put it in the too hard to do box, oh that's for other people and leave it.'

P9: '...things around writing, getting ethics approval...all these things are massively daunting even if you've done them before, so to do it for the first time just feels like barrier after barrier...'

In addition to resilience being a necessary personal attribute to conduct research, a perception that pharmacists needed to be self-motivated was also cited. This appeared to be a view shared by all the chief pharmacists as they all talked about individuals needing to be self-motivated to undertake research. Illustrating this two chief pharmacists were of the opinion that to undertake research the desire or drive to do so had to come from the individual themselves.

P6: 'So I think they've got to have the desire in them to do it in the first place erm...'

P3: '...the drive comes from the individuals that want to do it, erm as a chief pharmacist I want to encourage it and allow it...to happen but I'm not going to enforce it on anyone.'

Most of the chief pharmacists interviewed also appeared to be of the opinion that not all pharmacists would be interested in undertaking research and therefore supporting those

interested in undertaking research appeared to be the approach taken by the majority. This is illustrated by the following quote from one chief pharmacist interviewed:

P6: '...you are going to get some people who will just say I want to go and do a PhD erm..you know there will be a whole range in between erm..and there's an awful lot of pharmacists who've got no interest in research at all I suspect...erm and I suppose what we've got to try and do is try and capture, find the ones that have and give them the opportunities we can....I think what we've got to do is if we are talking about trying to encourage research is find those people who've already got those little seeds that are already planted and make sure they're watered and grow...'

Taken together these findings arguably suggest that rather than believing their role to be to drive research activity among pharmacists employed in their organisation, chief pharmacists perceived their role to be to support those interested in undertaking research.

Having a questioning mindset was also cited by some as being a personal attribute which enabled pharmacists to undertake research. Being inquisitive in nature appeared to be a quality that chief pharmacists as a group perceived to be important as illustrated by the following quotes from two chief pharmacists:

P3: '...also thinking about which pharmacist...erm could be research active but aren't, and trying to encourage them. We generally, generally we know the people who are inquisitive and want to do things that are related to that, and it's perhaps giving them that support and just enabling.'

P12: 'Erm, I think research requires a degree of self-motivation...and self-direction, and not all pharmacists, or anybody necessarily has that self-direction, self-motivation to do it, or level of inquisitiveness which takes them down that route...so not everybody is going to be a natural researcher....'

In term of competence as an enabler, this was cited in the context of individuals needing to possess research knowledge and skills to undertake research. Several suggestions were made by participants in relation to how they believed pharmacists could gain research skills. Postgraduate qualifications such as Masters or PhDs were cited by several as a way that pharmacists could learn research skills. Indeed the majority of those interviewed who were research active said they had personally gained their research skills through undertaking postgraduate qualifications.

P11: '...well I suppose my PhD gave me the training and the post doc helped me develop research skills and writing skills particularly, paper writing...'

Rather than pharmacists undertaking formal qualifications, some participants suggested that departmental in-house training could potentially be another way for pharmacists to learn such skills. However, it appeared to be training in 'softer' research skills which interviewees perceived could be delivered in house, rather than training in research methodology. For example, training in academic writing was suggested as a skill that could be taught through in-house training.

P8: '...the lunchtime training is always clinical, well it would be good if they did some research training, you know, 'how to write a paper' because people have probably have done things that they could write up but they won't write them up because they don't know how.'

P1: '...you know, we do a lot of clinical training, we do the lunch time training is always clinical, well it would be good if they did some research training, you know 'how to write a paper' because people probably have done things that they could write up but they won't write them up because they don't know how and they don't know where and they don't know how to look for a journal.'

Indeed at one of the case study sites, in-house training was already being delivered but it related to publishing research. The intention of the training appeared to be to encourage more people to try to get research published rather than to develop their research skills per se.

In the context of accessing training in research skills, several participants also referred to training available within their Trust and via links with academia. Rather than accessing training to learn the skills required to conduct research, participants said having research experience had enabled them to learn these skills.

At a more strategic level, integrating research into pharmacists' training at postgraduate level was suggested as a way to give pharmacists the competence to undertake research in their practice. However, rather than pharmacists undertaking postgraduate research qualifications to gain research skills, some participants were of the opinion that research should be incorporated into pharmacists' postgraduate clinical training.

P1: 'So I think incorporating it as a normal part of training. I also think the Diploma could do with a bit more research in because you could combine the two you know rather than expecting people to do an MRes, erm., you know if the clinical diploma just had a couple of units in, or incorporated into a couple of units about research, that would probably encourage more people to do it, as well I think. I think that's it.'

Another suggestion was that research could be integrated into pharmacists training by postgraduate research qualifications being recognised as an alternative to postgraduate clinical qualifications, rather than postgraduate research qualifications being undertaken in addition to clinical qualifications.

P11: 'I'd like to see the MRes given almost equal weighting or equal importance to a postgraduate diploma in clinical pharmacy so that pharmacists can really see both are equally important and valuable...'

P1: ‘...so when I did the MRes, when I came back they were saying we want more people to do the MRes and I was like ‘well put it in the job descriptions for some 7s that you’ll accept that over a diploma because I don’t think it’s fair that you expect people to do a two-year diploma and then an MRes and prescribing.’

8.2.3 Contextual domain at case study sites

In this section an analysis of the case study research data pertaining to the influence of the contextual domain on research activity is presented, beginning with a within-case analysis of the interview data from each case study site. This is then followed by a cross-case analysis of the data.

As per the analysis of the data relating to participants perceptions of the drivers, drawbacks, barriers and enablers to pharmacists undertaking research presented in section 8.2.2, quotes to illustrate findings have not been included where the quote itself could potentially identify a participant by their role. For some quotes, specific words have also been removed and replaced with more generic terms where there was a perceived risk that the quote could identify an individual or case study site. In addition, for this section of the analysis any quotes used have not been attributed to individuals’ roles or levels of seniority to avoid the risk of participants being identified by their colleagues. Likewise, attitudes and opinions of members of staff in roles which are unique within a department such as chief pharmacists have also not been reported to avoid the risk of individuals being identified by their colleagues. A different coding system has also been used to that used in section 8.2.2 to prevent any possibility of cross-referencing between the two analyses.

8.2.3.1 Within-case analysis

As outlined in section 7.2, the contextual domain at case study sites was perceived to relate to the organisational culture, leadership of the chief pharmacist and mechanisms of support for

research activity. The within-case analysis of the data from each case study site is therefore presented in these sections.

For each case study site, the section of the within-case analysis pertaining to organisational culture includes an analysis of the interview data collected from participants in response to questions relating to research strategies at Trust and departmental level. Research strategies at both of these levels were identified as influencing research activity in pharmacy departments in the context of organisational culture in the initial study. In the section relating to mechanisms of support, an analysis of the data pertaining to the model of support which led the Trust to be selected as a case study site is reported together with an analysis of the data pertaining to other mechanisms of support specifically explored through the interviews. These included the inclusion of a requirement to undertake research in job descriptions, the inclusion of research in annual appraisals and departmental academic links with universities. Additional factors perceived to support research activity at case study sites which became apparent through the course of the interviews are also included in this section of the within-case analysis for each case study site.

Table 17 below indicates the model of support for pharmacists to undertake research in place at each case study site. These were the models of support on which the Trusts were selected to be case study sites as previously outlined in section 8.1.1. The subsequent table (Table 18) provides a summary of the findings of the within-case analysis with respect to the factors pertaining to the contextual domain enquired about during the interviews and other mechanisms of support which became apparent through the course of the interviews, whether these factors were perceived to influence research activity among pharmacists, and if they were perceived to influence research activity, how they were perceived to do so.

Table 17: Models of support for pharmacists to undertake research on which case study site selection was based

Case study site	Model of support on which case study site selection was based		
	Trust was part of an Academic Health Science Centre (AHSC)	Pharmacy department had an Academic Practice Unit (APU)	Lead Pharmacist for research employed
1	Yes	Yes	No
2	Yes	No	No
3	No	Yes	No
4	No	No	Yes

Table 18: Summary of findings of within-case analysis relating to factors pertaining to the contextual domain and their perceived influence on research activity among pharmacists

Factor	Perceived influence of factor on research activity among pharmacists			
	Case study site 1	Case study site 2	Case study site 3	Case study site 4
Research culture at Trust level	Yes: research culture at Trust level indirectly influenced research activity via the AHSC	Yes: research culture at Trust level indirectly influenced research activity; AHSC perceived to have little/no influence	Yes: research culture at Trust level indirectly influenced research activity by making research 'easier' to undertake	Yes: research culture and/or improvement culture at Trust level indirectly influenced research activity by making research 'easier' to undertake
Research culture at departmental level	Yes: research culture within department influenced research activity by supporting and encouraging activity	Yes: research culture within department influenced research activity by supporting and encouraging activity	Yes: research culture within department influenced research activity by supporting and encouraging activity	Yes: research culture within department influenced research activity by supporting and encouraging activity
Trust research strategy	No: unclear if a strategy existed and no reference made to a Trust strategy influencing activity	No: the Trust had a research strategy but no reference were made to this influencing activity	No: the Trust had a research strategy but no reference was made to this influencing activity	No: the Trust had a research strategy but no reference was made to this influencing activity
Departmental research strategy	No: the department did not have a strategy per se although the APU had a strategy but no reference was made to this influencing activity	No: research a strategic aim of the department but no departmental strategy in place	No: research integrated into department strategy but no reference was made to this influencing research activity	Yes: integrated research into the departmental business priorities was perceived to strengthen engagement

Table 18 continued

Factor	Perceived influence of factor on research activity among pharmacists			
	Case study site 1	Case study site 2	Case study site 3	Case study site 4
Leadership of the chief pharmacist	Yes: through being supportive of research activity	Yes: through being supportive of research activity	Yes: through being supportive and encouraging of research activity	Yes: through being supportive of research activity, driving engagement and creating a research culture within the department
Trust being part of an AHSC	No: no reference to this enabling research activity, although the Trust being part of an AHSC perceived to indirectly influence research activity (NB the Trust being part of an AHSC was a model of support on which case study site selection was based)	No: no reference to this enabling research activity, although the Trust being part of an AHSC perceived to indirectly influence research activity (NB the Trust being part of an AHSC was the model of support on which case study site selection was based)	Not applicable: Trust was not part of an AHSC	Not applicable: Trust was not part of an AHSC
Department having an APU	Yes: by positively influencing the departmental research culture and providing support for research activity (NB the department having an APU was a model of support on which case study site selection was based)	Not applicable: Department did not have an APU	Yes: by positively influencing the departmental research culture and providing support for research activity (NB the department having an APU was the model of support on which case study site selection was based)	Not applicable: Department did not have an APU

Table 18 continued

Factor	Perceived influence of factor on research activity among pharmacists			
	Case study site 1	Case study site 2	Case study site 3	Case study site 4
Lead pharmacist for research	Yes: by providing access to research expertise and driving research activity (NB existence of role became apparent through course of interviews conducted at the site i.e. it was not a model of support on which case study site selection was based)	Yes: by providing access to research expertise and encouraging research activity (NB existence of role became apparent through course of interviews conducted at the site i.e. it was not a model of support on which case study site selection was based)	Yes: by providing access to research expertise and encouraging research activity (NB existence of role became apparent through course of interviews conducted at the site i.e. it was not a model of support on which case study site selection was based)	Yes: by providing access to research expertise, driving engagement and contributing to the departmental research culture (NB unlike case study sites 1,2, and 3 the department having a lead pharmacist for research was the model of support on which case study site selection was based)
Academic links	No: no reference to academic links providing support	Yes: by providing access to support through honorary contract through lead pharmacist	Yes: by providing access to research expertise and facilities not available within the Trust	Yes: by providing access to support
Inclusion of research in pharmacists' job descriptions	No: no reference to this influencing research activity	No: no reference to this influencing research activity	No: no reference to this influencing research activity	No: no reference to this influencing research activity
Inclusion of research in pharmacists' appraisals	No: no reference to this influencing research activity	No: no reference to this influencing research activity	No: no reference to this influencing research activity	No: no reference to this influencing research activity

Table 18 continued

Factor	Perceived influence of factor on research activity among pharmacists			
	Case study site 1	Case study site 2	Case study site 3	Case study site 4
Other mechanisms of support i.e. those which became apparent through the interviews	Yes: posts funded through programme grants allowing pharmacists to be employed with research as their primary role; through research being part of individuals' job plans; through research being undertaken as part of a postgraduate qualification	Yes: through individuals being allowed time through backfill arrangements from research funding; through individuals having joint appointments with academia; and through research being undertaken as part of a postgraduate qualification	Yes: through individuals being allowed time through backfill arrangements from research funding; through research being part of individuals' job plans; through clinical academic appointments; through research being undertaken as part of a postgraduate qualification; and through departmental research forums providing support for research activity and encouraging staff to engage with research	Yes: through individuals being allowed time in the working day to undertake research which aligned to the departmental business priorities; and through departmental research forums providing support for research activity

Case study site 1

Case study site 1 was selected to be a case study site as the Trust was part of an Academic Health Science Centre (AHSC) and the pharmacy department had an Academic Practice Unit (APU).

Organisational culture

At Trust level the organisation had a culture for research, as illustrated by one participant who described the Trust as being 'committed to research'. However, the culture for research at this level did not appear to extend to pharmacy-led research as exemplified by the suggestion of one participant that the Trust paid 'lip service' to research led by pharmacists. Instead the culture at Trust level was perceived to be dominated by clinical trials and research led by medics which some perceived to be to the exclusion of not only pharmacy-led research but all other research.

PA: '...if you're talking about clinical trials...great, if you're talking about other things like what we might want to do like looking at processes or systems, or improvements or whatever... I think it gets forgotten...I think people think of research as clinical trials.'

Reference was also made to confusion at Trust level between pharmacy-led research and pharmacy support for research in terms of managing clinical trials medicines suggesting that at Trust level pharmacy engagement with research was perceived to be limited to supporting the delivery of clinical trials.

PA: '...there's always some confusion in this organisation because when anybody talks about pharmacy research, they just talk about clinical trials.'

No reference was made to the Trust culture per se influencing research activity among pharmacists, although some perceived the Trust being part of an AHSC indirectly influenced the research culture within the pharmacy department as illustrated by the following quote:

PB: 'I think indirectly it does. I think it's quite subtle in the way it influences em....because it creates all of these different opportunities where people are often encouraged and supported to have a multidisciplinary approach....but it is quite indirect I would say.'

However, any influence the Trust had on pharmacy research, by being part of an AHSC, appeared to be negligible as most felt the AHSC had little or no influence on research activity among pharmacists. Several attributed this lack of influence to pharmacists being unaware of its existence.

A research culture was also apparent at departmental level. Research was described by one participant as the departmental 'ethos' suggesting they perceived the culture for research within the department to be deeply embedded.

By making research more visible, having an APU within the department was perceived by some to contribute to the culture for research.

PB: 'Em...well... so having an actual unit and research team at the Trust...certainly for our department, people are aware that we exist, so they, they know that there are research opportunities...'

In terms of the influence of this culture on research activity, descriptors such as 'supportive' and 'encouraging' were used to describe the culture at departmental level, suggesting the culture was perceived to both enable and drive research activity within the department.

Despite the culture being pro-research, research was still not perceived to be a departmental priority by one participant.

PB: 'I think at the end of the day, we are still in a very tight financial situation, resources are scarce, patient demand on the service is high... so research is something

that is seen as important, it's em helpful and useful em...but may not always be a priority and quite often may be deprioritised.'

In relation to a Trust level research strategy, it was unclear whether the Trust had such a strategy as participants were unsure about the existence of a strategy at Trust level. Some assumed that the Trust would have a research strategy but of those who assumed this to be the case, several believed any reference to pharmacy would be in relation to pharmacy support for clinical trials. In terms of a research strategy at departmental level, such a strategy did not appear to exist. However, reference was made to the annual objectives of the APU by some interviewees, suggesting that the APU objectives were viewed as a proxy for a departmental research strategy. Therefore, neither a Trust level research strategy nor a departmental research strategy appeared to be driving research activity among pharmacists.

Leadership of the chief pharmacist

All participants felt the leadership of the chief pharmacist influenced research activity. The chief pharmacist was described as 'supportive' of research activity within the department suggesting their leadership influenced research activity by enabling research to be undertaken.

Mechanisms of support

The Trust being part of an AHSC was described as a partnership between the Trust and a local university with some citing its purpose as being to integrate clinical practice and research.

PB: 'It helps to connect relevant people within academia to those in clinicians and managers in practice so we can better translate research into practice, but also help use the practice-based knowledge to direct and guide research priorities as well.'

However, the Trust being part of an AHSC did not appear to be a mechanism through which pharmacists were supported to undertake research, which one participant appeared to attribute to the AHSC structure being aligned to that of the medical profession.

PJ: '...but I think [the AHSC] has quite a big focus on the medical profession and medical research....and in a way pharmacy practice research and health services research doesn't really fit this sort of medically dominated set of groupings.'

With regard to the pharmacy department having an APU, all participants referred to the APU as a collective of researchers undertaking research relating to pharmacy practice, extensively comprising pharmacists but also including researchers from other professional backgrounds. Although the APU comprised a discrete group of individuals, it was viewed as part of the department rather than being seen as separate to it. In terms of the APU being a mechanism of support, the APU provided staff within the department with access to individuals with research expertise and with whom they could discuss their research ideas. In addition, participants cited the APU as enabling research activity through the promotion of research opportunities. As cited earlier, the department having an APU was perceived to also have a positive influence on the culture of the department by making research visible.

In addition to the APU, the department also had a lead pharmacist for research whose role was to support those interested in undertaking research. Examples of the types of support they provided specifically referred to by participants included discussing research ideas, providing help to design studies, and support in writing grant applications. Several also credited the lead pharmacist for research with driving research activity within the department.

PB: 'I think that's the key for us. I think that [the lead pharmacist for research] has been the driving force for the research agenda within our department for pharmacy.'

The position was graded at a senior level according to NHS AfC banding and the individual in post at the time of the interviews was personally experienced in research, having a doctoral level postgraduate research qualification.

Regarding the inclusion of research in pharmacists' job descriptions, most participants thought research was included in the job descriptions of all pharmacists employed at the Trust. However, no reference was made to this enabling or driving research activity or making research an expected part of pharmacists' roles. The inclusion of research in pharmacists' job descriptions did not therefore appear to influence research activity. Likewise, despite all those interviewed in the pharmacists group reporting that research formed part of their annual appraisals, none referred to the inclusion of research in pharmacists' appraisals influencing research activity.

In terms of academic links as a potential mechanism of support, it was via the APU that the department had developed formal links with a School of Pharmacy. Interestingly these links were with a different university to that which the Trust had links as part of the AHSC. However, on the whole participants did not appear to view these academic links as directly providing support. Instead the Lead Pharmacist for research and other members of the APU appeared to be viewed as more of a support mechanism.

In relation to other mechanisms of support at departmental level, pharmacists were supported to undertake research through funding from programme grants enabling pharmacists to be employed with research as their primary role. Reference was also made to pharmacists being allowed time to undertake research in the working day where research was being undertaken as part of postgraduate qualification and through research being part of individuals' job plans e.g. those in consultant pharmacist posts.

Case study site 2

Case study site 2 was selected to be a case study site because the Trust was part of an AHSC. However, unlike case study site 1, the pharmacy department did not have an APU.

Organisational culture

Participants perceived there to be a culture of research at Trust level within the organisation as illustrated by the following quote from one participant who, in reference to the Trust research culture, described research to be a core activity at Trust level.

PO: 'I would say pretty strong, and we've got a very strong desire from the chief executive and the executive team to have research as a core activity of the organisation.'

Despite there being a culture for research at this level within the organisation, the Trust culture was not perceived to have any direct influence on research activity among pharmacists. However, some participants felt the Trust being part of an AHSC indirectly influenced research activity in the department. For example, the influence of the AHSC on research activity within the department appeared to be suggested by one participant to be subliminal.

PK: 'I don't know how meaningful it is on the ground but I'm sure those kind of things feed down...without us knowing.'

Contrary to this, others appeared to feel it had no influence on research activity which one participant attributed to those staff not engaged with research lacking an understanding of what the AHSC was.

PO: 'I don't think it has. Certainly from my experience here it hasn't...I guess their impact has been variable and their visibility down into departments like pharmacy I think has been, has been variable as well. And certainly within [name of Trust] it's I

think pretty confusing for non-research immersed people to understand what the Academic Health Science Centre is...'

Like the culture at Trust level, the pharmacy department was also perceived to have a research culture as illustrated by references made by participants to feeling allowed to undertake research.

PN: 'Erm.. well the support of my employer has been to allow me to do it.....so just them allowing me to do that [undertaking a postgraduate qualification] and develop myself has allowed them to, you know, they've shown they're happy to invest in me and give me the time of day basically and that's the most important bit of support they've given me.'

Reference was also made to research opportunities being promoted within the department which suggesting that research was not only supported but encouraged. Having a departmental culture for research therefore appeared to influence research activity among pharmacists. However, not everyone interviewed appeared to believe the culture was as embedded as perhaps it could be. For example, one participant felt that research was deprioritised in favour of delivering the core service.

PK: '...but staffing is an issue, so the first thing to go is research unfortunately, you've got to do your core service, you've got to deliver patient care first and foremost...'

Likewise, another perceived the research culture in the department to be 'naïve'.

PO: 'Erm..pretty research naïve actually.... It's probably not a strong cultural thing at all.'

The same participant also felt more could be done to develop the departmental research culture, even though they perceived the culture of the department to be comparatively better to that of other Trusts.

PK: 'Comparatively to other Trusts I imagine we're pretty...er very good erm, but I still think there's things that need to be done to develop that culture even more.'

In terms of research strategies, it appeared from participants' responses that a research strategy was in existence at Trust level. However, the aim of the strategy was perceived to be to increase Trust revenue from research.

PN: 'Er.. so the Trust as a whole certainly has a research strategy.....er it's part of the core values of the organisation is to be the best healthcare provider in the world, or one of the best healthcare providers in the world...but again as I've said before their research strategy primarily is targeted at the big bucks, the big grants, the professors bringing in millions of pounds a year.'

Although not cited explicitly by any participants, I would suggest it can be assumed that increasing pharmacy-led research was not perceived to be part of the research strategy for the Trust and therefore it is fair to assume that the Trust research strategy was not driving research engagement among pharmacists.

Regarding a departmental research strategy, such a strategy did not appear to be in place. Therefore a research strategy at this level was not driving research activity within the department. Research did however appear to be strategic aim of the department as a desire to increase research activity within the department was cited as being an aspiration in the pharmacy business plan.

PO: 'So we would have a pharmacy business plan...and the only element in that business plan around research is an aspiration to develop our research activities...but I

guess that aspiration has never been formalised into 'right okay what's our action plan for doing that?'

Leadership of the chief pharmacist

The chief pharmacist was perceived to be supportive of research activity within the department and their leadership appeared to enable research activity to take place.

Mechanisms of support

In reference to the model of support on which the case study site was selected i.e. the Trust being part of an AHSC, most participants believed the AHSC to represent a collaboration between the Trust and academia with the purpose of developing clinical academic research.

PN: 'So it's a collaboration between [the Trust] and the [a named university] so it builds that clinical academic aspect.'

However, the Trust being part of an AHSC did not appear to represent a mechanism of support for pharmacists to undertake research as several participants made reference to the personal difficulty they had experienced accessing support for pharmacy-led research within the Trust.

PK: 'There's a big...they do a lot of research, a lot of clinical trials...my research falls within health services research and I think it falls between the cracks...'

Reference was also made to the existence of formal organisational structures within the Trust to support research but these again were not perceived to support pharmacy-led research.

PO: 'They [the divisional leads for research] don't have a role in terms of encouraging non-traditional departments to engage in research activity... they're there really I think to support clinicians, medics with their research and make sure the Trust captures that research activity so it can reflect it in its reporting back,..erm on the Trust's overall research activity.'

In terms of support at departmental level, although not a model of support on which the Trust was site was selected to be a case study site, a lead pharmacist for research was employed whose role appeared to be to encourage and support research activity. Promoting research opportunities to staff, helping staff to apply for research grants, providing advice in terms of designing research studies, and signposting staff to other sources of help and advice in relation to research were all cited as examples of how having an individual in this role supported pharmacists to undertake research. The individual in post at the time of the interviews being undertaken was experienced in undertaking research with doctoral level postgraduate research qualifications.

With regard to academic links, the department had established formal links with a School of Pharmacy at the same university that the Trust was partnered with as part of the AHSC. These academic links were cited to be part of a reciprocal arrangement between the Trust and the university in that the university provided the pharmacy department with support for research in return for the pharmacy department providing support for teaching. The support provided by the university took the form of a lead pharmacist for research in that they were employed by the university, but had an honorary contract with the Trust which allowed them to work in the pharmacy department on a part-time basis.

In terms of the inclusion of a requirement for research in pharmacists' job descriptions and annual appraisals, research did not appear to be routinely included in either. These were not therefore mechanisms of support for research activity at this case study site.

Other mechanisms of support for pharmacists to undertake research at departmental level included support for postgraduate research qualifications and funding from NIHR fellowships allowing staff to undertake research through backfill arrangements. Joint appointments with academia also allowed individuals time to undertake research.

Case study site 3

Case study site 3 was selected to be a case study site because the pharmacy department had an APU. However, unlike case study site 1 the Trust was not part of an AHSC.

Organisational culture

The Trust was perceived to have a research culture as exemplified by one participant who described research as a 'core activity' for the organisation. However, the culture at this level was aligned to the income associated with commercial research as illustrated by the following quote:

PL: 'I think the focus is on research income and participation in multi-centre studies that are commercial studies, more so than kind of investigator-led research to answer questions for the hospital in particular...'

Reference was also made to the culture being more aligned to medic-led research as illustrated by the following quote from another participant who made reference to the personal difficulty they had experienced accessing support from an academic unit in their Trust. They attributed this to the research activity in the Trust being aligned to research led by medics.

PP: '...if you're trying to go to these academic units and trying to ask people things, they just, they just don't get back to you [] maybe it's a prejudice against pharmacists, well not just a prejudice against just pharmacists but I guess other professions because it's medically-led'

However, the research culture at Trust level within the organisation did not appear to encompass pharmacy-led research as illustrated by the following quote from a participant:

PG: 'I don't think anybody knows that we even do it, but people think research and they think pharmacy, they just think supplies of clinical trials drugs.'

They appeared to be of the opinion that not only was there a lack of awareness of pharmacy-led research at Trust level within the organisation but that at Trust level pharmacy involvement in research was associated only with the management of clinical trials medicines.

Not only was there a perception that the Trust research culture did not extend to pharmacy-led research it was also perceived to have no direct influence on research activity among pharmacists as illustrated by one participant who said there to be no mechanism by which the department was held accountable for research activity at Trust level.

PG: '...the Trust doesn't require us to be particularly research active in research....it would never appear in a report or anything like that...'

However, the same participant recognised that the Trust having a research culture made research easier to conduct at departmental level.

PG: 'So it helps being in a research focused organisation because that gives you permission...so if you're putting something forward that's saying as a pharmacy department we want to support this individual to have the time off to do research, the organisation understands that.'

Therefore, although not directly cited, the Trust culture appeared to be perceived to indirectly influence research activity among pharmacists by removing some or all of the contextual barriers preventing engagement.

There was also a culture for research within the pharmacy department which was perceived to both support and encourage research activity. References were made to the culture being permissive of research in that, for example, individuals felt allowed to apply for research grants. Research opportunities appeared to be actively promoted within the department to all staff.

However, despite there being a departmental culture for research, some participants were of the opinion that the culture was in the early stages of development.

PM: ‘...I think at the moment it’s [the research culture of the department] very much in its infancy.. I hope it develops and continues to grow...’

Also supporting this was the view of another participant who believed research to be undertaken by only a minority of staff within the department.

PG: ‘...it’s still very much a minority...specialist thing that a few get involved with but the majority don’t...’

With regard to a Trust research strategy, it seemed that although the Trust had such a strategy in place, it did not appear to influence research activity among pharmacists as those familiar with it believed it did not specifically make reference to pharmacy-led research.

PG: ‘Erm.. there’s definitely a strategy. It’s about increasing patient recruitment.... It doesn’t specifically exclude pharmacy but it doesn’t particularly mention pharmacy...they do talk about making it more inclusive, research for all, not just about doctors...multiprofessional so it has that element in it.’

In terms of a departmental research strategy, rather than the strategy being a standalone document, research appeared instead to be integrated into the overall departmental strategy.

PG: ‘...we have within our overall pharmacy strategy.. we have bits that talk about us wanting to be research active, to bring research into mainstream pharmacist practice.’

No reference was made however to the incorporation of research into the departmental strategy influencing research activity among pharmacists.

Leadership of the chief pharmacist

All participants perceived the chief pharmacist to be supportive of research. Some also described their leadership as encouraging research.

PC: 'I think the chief pharmacist needs to be someone that encourages research and encourages career development in that way, erm and they...I do feel that is the case here, yeah.'

The leadership of the chief pharmacist did appear therefore to be perceived to influence research activity among pharmacists by enabling and encouraging research in the department.

Mechanisms of support

In terms of the pharmacy department having an APU, participants referred to this as being a collective of researchers extensively, but not limited to, pharmacists by profession. A researcher who was not a pharmacist by profession, but who had a background in qualitative research, was also employed as part of the APU to support qualitative research being undertaken by members of the APU.

Although a distinct group, the APU was not seen as being separate to the pharmacy department.

PC: '...so it's relatively nebulous in terms of its physical appearance, it's a group of dedicated staff keen to promote research among the department....it's part of the department, it's not a discrete thing.'

The APU appeared to be perceived to have a positive influence on research activity among pharmacists, illustrated by the following quote from one participant who believed the APU increased research engagement among pharmacy staff.

PC: 'I think it increases the chances of [the department] getting pharmacists and other pharmacy staff to undertake research.....so it has a positive effect on influencing them, so as members of pharmacy, they know where to come, I hope if they have an idea we can signpost them and help and encourage them.'

Reasons offered as to why it was felt that having an APU influenced research activity included the existence of the unit raising awareness of research opportunities among staff as well as the unit allowing staff access to individuals with research expertise who could provide support and signpost to other sources of help. Several also made reference to the APU having a positive influence on the departmental culture by suggesting that having an APU encouraged research activity within the department.

PG: 'So I think it [the APU] provides [pharmacists] with erm...it provides [pharmacists] with an incentive that I said is kind of missing, somebody at the unit is there prodding saying 'Do you want to do research, we can help you, this is what has been done before erm and these are the resources available in the Trust to help you with research.'

In terms of other mechanisms of support for pharmacists to undertake research at departmental level, in addition to establishing an APU, the chief pharmacist had also created a role which encompassed the provision of leadership for research. As well as supporting research activity within the department by providing staff interested in undertaking research with access to research expertise, leading the APU and developing a research culture within the department were also cited as part of the role of the individual in post.

The post was graded at a senior level according to NHS AfC banding and the individual in this role at the time the interviews were undertaken was themselves experienced in undertaking research and had a doctoral level postgraduate research qualification.

Several participants also appeared to view formal departmental research meetings as another mechanism for support. Such meetings were held on a monthly or bi-monthly basis and were attended by the chief pharmacist, the lead pharmacist for research, and those pharmacists in the department undertaking research. In terms of how the meeting supported research activity, most referred to the meetings as a forum for discussing current research and grant applications as well as new research ideas. Peer support was also cited as another way through which the departmental research meetings provided support. Such meetings were also perceived to be a mechanism through which research activity was encouraged within the department.

PL: ‘...we meet I think it’s twice a month, and we have a deliberate research strategy and that is to encourage pharmacy staff, pharmacists and pharmacy technicians, to become research active, we’ll either support them ourselves, those of us who are more senior in the group, or we can signpost them.’

Regarding academic links, the department had established formal links to a School of Pharmacy via the APU which appeared to support research activity within the department by providing pharmacists with access to research expertise and facilities not available within the Trust. Reference was also made to collaborative research undertaken jointly between the department and the university. Interestingly, the academic links at Trust-level were aligned to a university with a School of Medicine but not a School of Pharmacy meaning the departmental academic links were with a different university to the university linked with the organisation at Trust-level.

In terms of whether a requirement to undertake research was included in pharmacists’ job descriptions, such a requirement was included in the job descriptions of those who had research as a formal part of their role but this appeared be no more than in recognition of it being part of their role. No references were made to the inclusion of a requirement to

undertake research in the job descriptions of those with research as a formal part of their role driving or enabling such individuals to undertake research. For staff where research was not a formalised part of their role, it was unclear whether a requirement to undertake research was in their job descriptions. Some were of the opinion that a requirement to undertake research was not included while others believed a requirement to undertake research was a general clause included in all pharmacists' job descriptions. However, one participant was of the opinion that even if this was the case this requirement did not translate into an expectation of research activity.

PM: 'For a lot of us, although it might be in our job description it's not an expectation of our day to day work that we do research. So it's sort of an extra.'

Including a requirement to undertake research in pharmacists' job descriptions did not appear to be perceived to influence research activity within the department.

Regarding the inclusion of research in appraisals, research appeared only to be routinely included in appraisals of those where research was a formal part of their role but no reference was made to this driving them or enabling them to undertake research. The inclusion of a requirement to undertake research in pharmacists' appraisals did not appear to influence research activity.

In terms of other ways that staff in the department were supported to undertake research, some participants interviewed were allowed time to undertake research through backfill arrangements as a result of research funding from individual grant applications. Some participants had also been allowed time at work to undertake research as part of postgraduate research qualifications while others had been allowed time to undertake research because research was either included in their job plan or they had a clinical academic appointment.

Case study site 4

Case study site 4 was selected to be a case study site because the pharmacy department had a lead pharmacist for research. Unlike the other case study sites the pharmacy department did not have an APU and neither was the Trust part of an AHSC.

Organisational culture

The Trust was perceived to have a positive culture for research with participants using descriptors such as 'supportive' and 'encouraging' to describe the culture.

PH: 'So this Trust I work in has a very positive culture about research...the Trust, as a whole, it's always very erm encouraging about research work.'

Although clinical trials appeared to dominate the culture, other types of research also appeared to be supported within the organisation, as illustrated by the following quote:

PD: 'So we've got a lot of trials on-going. There's a good mix of qualitative and quantitative, new drugs and experimental treatments.'

Regarding participants' opinions in relation to whether they felt having a research culture at Trust level influenced research activity among pharmacists, although no participants made reference to any mechanisms through which the research culture in pharmacy was directly influenced by that at Trust level, several believed the culture for research at Trust level made it easier to undertake research at departmental level.

PH: 'So, the Trust having a positive culture for research, so that just makes it easier to get involved and the get the whole team involved.'

Rather than the Trust culture for research influencing research activity within pharmacy, some participants perceived the Trust having a culture for improvement enabled research activity among pharmacists. The following quote from one participant illustrated this. Although they

were explicit in their belief that the culture for improvement within the organisation was not driving research activity within the department, they appeared to feel it meant there were no or fewer barriers to overcome for the department to be research active.

PE: 'I do know within the organisation, not all services are like our service...there are services that aren't focused in this way at all. So it is possible to sit within a broader organisational culture and not be doing what we're doing...so we're not doing what we're doing because the Trust has its culture as I've described, it just makes it easier to do what we want to do.'

Likewise, another participant also appeared to recognise that the culture for improvement at Trust level facilitated research activity in that they described the organisation as having a 'can do' attitude which they related to research activity being supported within the Trust.

PD: 'So [the Trust is] very supportive of research...it's got a very 'can do' attitude...'

It was therefore unclear as to whether it was a research culture or improvement culture at Trust level that was influencing research activity among pharmacists but either way the influence appeared to be indirect in nature.

With regards to departmental culture, all interviewees appeared to view the culture as being positive towards research with several describing the departmental culture as actively encouraging research activity. Raising awareness of research activity in the department was cited as contributing to the culture for research.

PD: 'Obviously the department gets research, not everybody does it, but we do understand that this is something that's important to us...sticking up posters everywhere, sticking our papers on the research notice board...all that keeps that subliminal message of we're a research er friendly department and we want to be active in research, and we want to support new people to be research active.'

Research appeared to be perceived to be an expectation of pharmacists as illustrated by the following quote:

SH: 'So it's [research is] almost seen as an expectation almost, that if you come to work for us that that will be something that you will be undertaking.'

Research was also believed to be an integral part of pharmacy practice at the Trust.

PF: '...it's just part and parcel of what we do. It's not...it's gone beyond that we have to focus on it. It's actually, yeah, just business as usual'

Regarding the Trust having a research strategy, although some appeared to be aware of the existence of a strategy, most appeared to be unsure but were inclined to assume the Trust would have one. Those who assumed the Trust to have a strategy appeared also to assume that it would be aligned to clinical trials, and for this reason believed pharmacy-led research would not be included.

PE: 'Erm...yeah I'm tempted to say it must have...but I don't know off the top of my head...erm I would say that the Trust's research strategy is more likely...to be aligned to the clinical trials strategy....so actually our, our research is probably erm, it wouldn't be seen as part of that'

Another participant, who appeared familiar with the strategy, believed that although there was no explicit mention of pharmacy-led research in the strategy, it was not excluded. However, regardless of whether participants perceived the Trust strategy to include pharmacy-led research or not, none made any reference to Trust research strategy influencing research activity in pharmacy.

In terms of a departmental research strategy, rather than there being a standalone strategy, research was instead integrated into the department's business priorities meaning that research and the department's business priorities to be inextricably linked.

One participant appeared to suggest that this approach had helped, or was helping, to engender a research culture within the department.

PE: 'So it strengthens engagement... 'cause it means research isn't just one person's business it's everybody's business...'

Leadership of the chief pharmacist

All participants were of the opinion that the chief pharmacist was supportive of research. They were also perceived to be driving research activity and credited with creating a positive research culture within the department.

PR: 'I think erm certainly [the name of the chief pharmacist] has been the driving force here as chief pharmacist.'

Therefore the chief pharmacist appeared to be influential in terms of the department being research active through both supporting and driving engagement.

Mechanisms of support

The Trust was selected to be a case study site based on the department employing a lead pharmacist for research. The role encompassed the development of research activity among pharmacists as illustrated by the following quote from one participant who was of the opinion that the role was driving research activity with the department:

PE: '...[the lead pharmacist for research] stimulates research...[they] are like a conductor of an orchestra [they] support and encourage others...'

The role was also perceived to be contributing to the development of research culture within the department by making research visible as illustrated by the following quotes:

PE: ‘...[the lead pharmacist for research] has a got a presence er and a title that goes with it and people in the organisation understand that. Therefore erm, research isn’t seen as being something that is nice to do, it’s something that has to be done.’

PD: ‘...and because [the lead pharmacist for research role is] visible, [pharmacists] see it almost as a thumbs up for them to do stuff...it’s a green light to go.’

Another participant suggested that having the role made undertaking research more accessible for staff.

PR: ‘People see [the Lead Pharmacist for research] as a role model to say ‘well I could do some of that, that doesn’t seem to be too difficult’.....that’s very sort of tangible to people that they can do this with the right sort of encouragement.’

The role itself appeared to be an established post, having been in existence for a number of years, and was graded under NHS AfC banding at a relatively senior level. The individual in post at the time of the interviews had expertise in research, having both a doctoral level research qualification and significant personal experience of undertaking research.

When asked whether having the role influenced research activity within the department, participants were unanimous in their view that it did. One participant suggested that for research to be undertaken within the department, the role was essential.

PR: ‘...so without the [lead pharmacist for research] I don’t think it [research] would happen’

In terms of how the role influenced research activity, most participants talked about how the role supported staff to undertake research. Access to someone with research expertise who

could help in developing research ideas, advise with research methodology, and help with developing posters and writing publications were all cited as examples of how the role supported research activity within the department. Reference was also made to the post helping to bring academic rigour to research being undertaken within the department.

PE: '...having people like [the lead pharmacist for research] who bring in more of an academic understanding to, to bring some rigour to the evaluation...'

One participant also referred to the individual in post providing mentorship to others regarding research.

PF: '...basically [the lead pharmacist for research] is the ultimate pharmacist researcher, expert mentor...'

Regarding other mechanisms of formal support for research, the department had an established academic research group attended by the chief pharmacist and other senior leaders, which met monthly or bi-monthly. The purpose of the group was two-fold: it served a kind of gatekeeper function in that it enabled research activity being undertaken within the department to be prioritised and also for potential new areas for research to be identified, and the group members provided support for those interested in undertaking research.

PE: '...we've got the [departmental research group] and that's...that basically coordinates our work or tries to coordinate the work erm for the whole of the service.'

In-house training sessions were also facilitated by the lead pharmacist to support staff to publish their work.

Regarding academic links, the department had informal links with several local universities through which staff had accessed support for research which included statistical support for projects. In terms of formal academic links, however, although such links were not yet

established, the department was in the process of developing links with a local School of Pharmacy. Participants viewed this as an opportunity for the department to develop their research portfolio, as opposed to solely a way of accessing research expertise.

PE: ‘...erm things are looking quite bright in terms of future practice opportunities...clearly we’re going to have a much stronger relationship with [the name of the School of Pharmacy] than we did with [the name of the university through which the department had established informal academic links].. so we’re quite excited about that..’

In terms of whether a requirement to undertake research was included in pharmacists’ job descriptions, all those interviewed in the pharmacist participant group said they had research in their job descriptions and it was cited as being in the job descriptions of all pharmacists above a certain grade, regardless of whether or not they were research active. With regard to annual appraisals, again, research appeared to be included in the appraisals of all those who were interviewed in the pharmacist participant group. However, no reference was made to either the inclusion of research in job descriptions or annual appraisals representing mechanisms through which research activity was influenced within the department.

Regarding how pharmacists were supported to undertake research, those interviewed appeared to be allowed time to conduct their research as part of their working day. However, a caveat to being allowed time to undertake research appeared to be that the research they conducted was aligned to the departmental business priorities.

8.2.3.2 Cross case analysis

In this section a cross-case analysis of the data relating to the contextual domain from all four case study sites is presented.

From the within-case analysis it was apparent that the factors pertaining to the contextual domain explored through the case study research were either perceived to enable research activity and/or drive research activity, or appeared to have no influence. The findings are therefore presented in terms of these themes: factors perceived to drive activity; factors perceived to enable activity; and factors which appeared to have no influence on research activity.

Factors perceived to drive research activity

A department having a culture for research drove research activity among pharmacists through the encouragement of research. Making research activity 'visible' in the department was one way that research activity was encouraged at all four case study sites. Having a lead pharmacist for research, the department having an APU and departmental research forums were also cited as mechanisms through which research was made visible. Research activity was also perceived to be encouraged through the promotion of research opportunities within the department at two of the case study sites (case study sites 2 and 3) and at case study site 4 reference was made to promotion of departmental research activity being a way that research activity was encouraged.

Having a lead pharmacist for research was also perceived to be a driver of research activity among pharmacists at three of the four case study sites (sites 1, 3 and 4). At all of these sites reference was made to the individual in post personally driving research activity. Reference was also made at two of the case study sites (sites 3 and 4) to the existence of these posts influencing research activity through making research visible.

The leadership of the chief pharmacist was perceived to be driving engagement at case study site 4 and therefore appeared to be taking an active role in driving research within the department. This was not apparent at other sites. However, case study site 4 was not only different to the other case study sites in this respect but also differed because research was integrated into the departmental business priorities. At other sites research was described as a priority or strategic aim of the department but this did not appear to be perceived to drive engagement as no reference was made to this directly influencing activity at any of the sites. Integrating research into the departmental research strategy arguably did however appear to influence research activity as it was cited as 'strengthening engagement' at the site.

Regarding the research culture of the Trust, a Trust having a culture for research was perceived to indirectly influence research activity within the department at all four sites. However, a Trust having a culture for research did not appear to directly drive research activity among pharmacists as, at all four case study sites, a culture for research was perceived to exist in the organisation at this level but no reference was made at any of the sites to this directly influencing research activity among pharmacists. Presumably this was because pharmacy-led research was not perceived to be a priority at any of the sites at this level as at all four sites the Trust culture was perceived to be aligned to clinical trials and/or medic-led research.

Factors perceived to enable research activity

Having a departmental research culture was perceived to support research. This was exemplified by individuals at case study sites 2 and 3 making reference to their department having a culture for research meaning they felt 'allowed' to undertake research. Similarly, all of the chief pharmacists were described as being supportive of research, suggesting their leadership also enabled activity within their department.

Research activity among pharmacists was also facilitated to some extent by the Trust having a culture for research as at two of the case study sites (sites 3 and 4) participants made

reference to the Trust having a culture for research making it 'easier' for pharmacists to undertake research. However, as no reference was made to the Trust having a research culture directly supporting pharmacy-led research it is perhaps reasonable to assume that a Trust having a culture for research made it easier for pharmacists to undertake research because they were able to overcome contextual barriers to research engagement as opposed to being actively supported to undertake research. Indeed, support for pharmacy-led research at Trust level did not appear to be apparent at case study sites 2 and 3 as at these sites participants made reference to the difficulties they had personally experienced in accessing support at this level within the organisation.

Access to individuals with research expertise within the department was also perceived to enable research activity among pharmacists at all four case study sites, and at all four case study sites a lead pharmacist for research was cited as providing this internal support. At all four sites the individuals in these posts were experienced in undertaking research and either had, or were studying for, doctoral level research qualifications and thus had the research knowledge and skills to personally support research activity within the department, as well as being able to signpost individuals to other sources of help and support. APUs were similarly cited as providing access to individuals with research expertise, as were departmental research forums where these had been established. Links with academia were also perceived to provide staff not only with access to support, but also with access to infrastructure not available within the Trust such as IT software. It was interesting to note that reference was also made to these academic links providing staff with physical space away from the pharmacy department to enable them to work on their research undisturbed. Academic links therefore provided more than solely access to research expertise. Also of note was that at all four case study sites the academic links they had developed were with Schools of Pharmacy meaning that in some instances these links were with a different university to the university linked to the Trust at Trust level. Schools of Pharmacy appeared therefore to be perceived to specifically

offer the external support that pharmacists needed to conduct research. It was also interesting to note that peer support and mentoring arrangements through individuals with research experience being employed within the department were also perceived to be support mechanisms for pharmacist interested in research, and that, presumably by helping staff to identify those with research experience in the department, APUs and research forums were cited as providing staff with access to peer support.

Allowing pharmacists time to conduct research in the working day also appeared to facilitate research activity at all four case study sites. Several mechanisms to allow this were cited including the inclusion of research in individuals' job plans, research being a formal part of an individuals' role, research undertaken as part of a postgraduate qualification (sites 1, 2 and 3). By allowing individuals time to conduct research, it was also apparent that research funding facilitated research engagement at three of the four case study sites (sites 1, 2 and 3). In terms of how funding allowed pharmacists research time, case study sites 2 and 3 were similar in that individuals who had obtained research funding themselves through for example research grants or personal fellowships meant their posts were backfilled to allow them time to undertake research. However, at case study site 1 programme grants were cited as enabling pharmacists to be employed whose primary role was to conduct research. Either way research funding appeared to facilitate research at these sites. Case study site 4 was however very different. At this site pharmacists who did not have research included in their job plan or for whom research was not a formal part of their role were allowed to undertake research outside of postgraduate qualifications without obtaining funding to backfill their role, with the caveat that the research aligned to the departmental business priorities.

Factors which appeared to have no influence on research activity

Some of the factors identified in the initial study as having the potential to influence research activity among pharmacists were not evident in the case study research. These included the

inclusion of a requirement to undertake research in pharmacists' job descriptions and appraisals. Trust level research strategies were also not perceived to influence research activity among pharmacists at any of the sites. Likewise, departmental research strategies per se did not appear to influence research activity as none of the case study sites had a current standalone strategy.

A summary of the within-case analysis of the factors pertaining to the contextual domain and their perceived influence on research activity are presented in Table 19 below.

In the next section, the methods used to undertake the survey research and findings of this phase of the study are reported. The findings of the case study research and the survey research are then discussed together in chapter 10.

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Table 19: Summary of the cross-case analysis of case study research data relating to factors pertaining to the contextual domain and their perceived influence on research activity among pharmacists

Factor	Case study sites where factor was apparent	Perceived influence of factor on research activity and pharmacists	
		Perceived to drive activity	Perceived to enable activity
Culture for research at Trust level	All 4 sites	No reference was made to this being the case at any site	Yes: perceived to enable research activity at sites 2 and 3
Culture for research at departmental level	All 4 sites	Yes: described as encouraging research at all 4 sites	Yes: described as supporting research at all 4 sites
Research strategy at Trust level	Sites 1, 2 and 3 had a Trust strategy; unclear if one in existence at case study site 4	No reference was made to this being the case at any site	No reference was made to this being the case at any site
Research strategy at departmental level	Sites 1,3 and 4 had research integrated into departmental strategy or business priorities; none had a standalone strategy	Yes: at site 4 integration of research into departmental business priorities perceived to strengthen engagement	No reference to this at any site
Leadership of chief pharmacist	All 4 sites	Yes: perceived to encourage engagement at site 3 and drive engagement at site 4	Yes: perceived to be supportive of research at all 4 sites
Trust being part of an AHSC i.e. a collaboration between the Trust and a local university	Sites 1 and 2 only	Possibly: perceived to potentially contribute by the Trust culture indirectly influencing research activity	Possibly: perceived to potentially contribute by the Trust culture indirectly influencing research activity
Department having an APU i.e. a collective of researchers comprising mostly or all pharmacists	Sites 1 and 3 only	Possibly: described as positively influencing the research culture at departmental level	Yes: described as providing support for research activity

Table 19 continued

Factor	Case study sites where factor was apparent	Perceived influence of factor on research activity and pharmacists	
		Perceived to drive activity	Perceived to enable activity
Having a lead pharmacist for research i.e. a pharmacist with responsibility for leading research	All 4 sites	Yes: described as driving or encouraging research activity at all 4 sites	Yes: described as supporting research activity at all 4 sites
Departmental research groups i.e. forums attended by staff undertaking research +/-members of senior management team	Sites 3 and 4 only	Yes: perceived to encourage research activity at site 3	Yes: perceived to support research activity at sites 3 and 4
Departmental academic links with universities i.e. links with Schools of Pharmacy	All 4 sites	No reference was made to this being the case at any site	Yes: described as enabling access to infrastructure and support
Inclusion of a requirement to undertake research in pharmacists' job descriptions	All 4 sites (ranged from inclusion in job descriptions of all pharmacists to only those with research as a formal part of their role)	No reference was made to this being the case at any site	No reference was made to this being the case at any site
Inclusion of research in pharmacists' annual appraisals	Sites 1, 2 and 4 (although only reported by those interviewed; no reference to research being part of other pharmacists' appraisals)	No reference was made to this being the case at any site	No reference was made to this being the case at any site

Table 19 continued

Factor	Case study sites where factor was apparent	Perceived influence of factor on research activity and pharmacists	
		Perceived to drive activity	Perceived to enable activity
Individuals being allowed time to undertake research	All 4 sites	No reference was made to this being the case at any site	Yes: through either research funding; the inclusion of research in job plans; research being a formal part of individuals' roles; or through research being part of a postgraduate qualification

9 Survey research

This chapter pertains to the survey research undertaken in the second phase of the main research study. This phase of the main research study is highlighted in Figure 7 below.

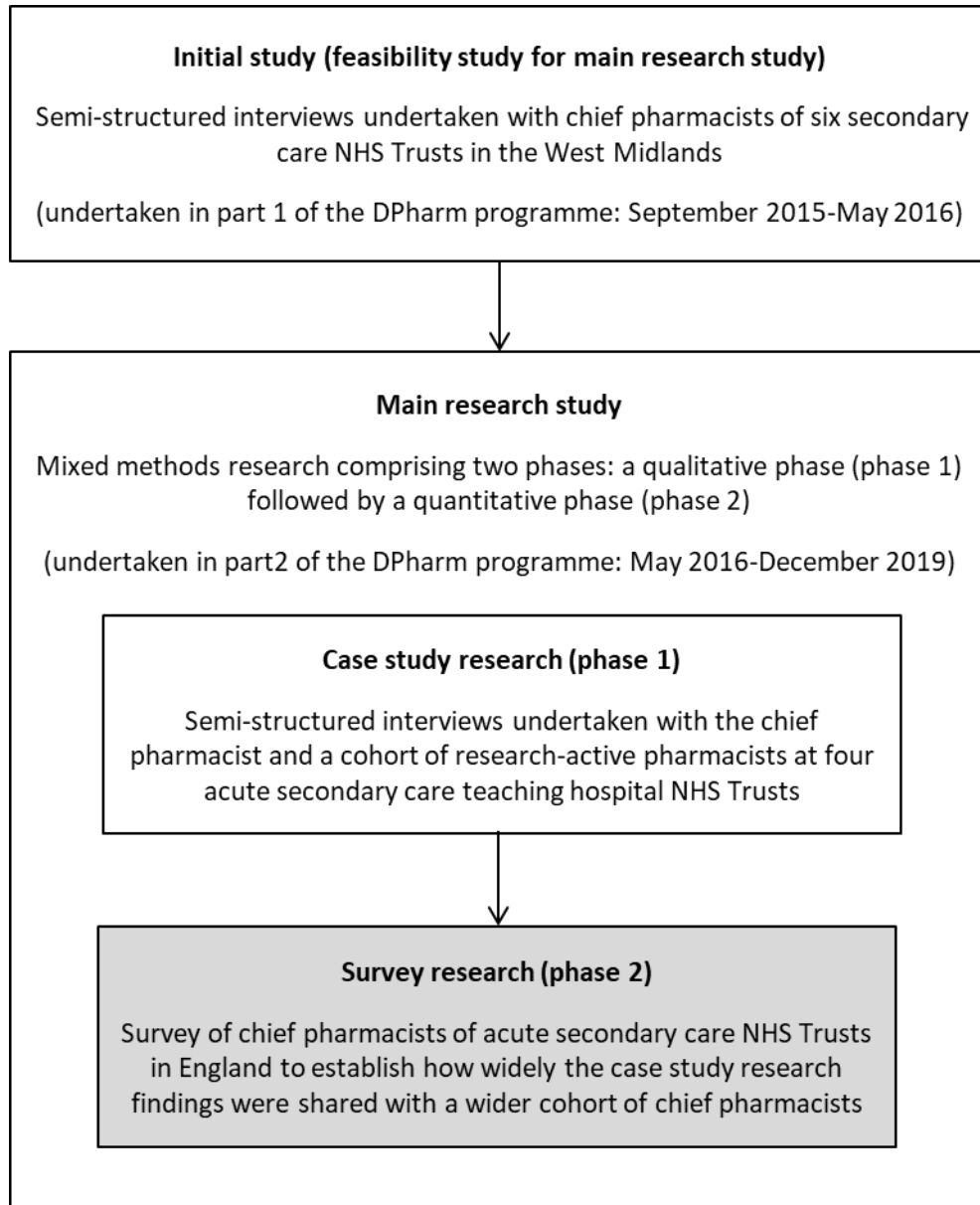


Figure 7: Flowchart highlighting the survey research

As previously outlined in chapter 7, survey methodology was used in this second phase of the research to establish how widely the findings of the case study research were shared among a larger population. To undertake this phase of the research, a structured questionnaire was developed which was distributed as a self-administered web-based survey to chief pharmacists of acute secondary care NHS Trusts. As previously described in section 7.3 the questionnaire used to collect the data was developed based on the findings of the case study research.

In this chapter I outline the methods used to undertake the survey research and present the survey results. For an explanation of my rationale for using survey methodology for this phase of the study refer to section 7.3.

9.1 Methods

In this section I outline the methods used to recruit participants and the methods used to collect and analyse the survey data.

9.1.1 Participant sampling strategy

Selection of participants

The population of interest for the survey was chief pharmacists of all acute secondary care NHS Trusts in England but not just teaching hospitals.

Chief pharmacists were selected to be the population of interest for two reasons:

Firstly, it was felt that their collective attitudes and opinions would give greater insight into the factors influencing research activity among pharmacists. The reasoning for this was two-fold: the findings of the case study research suggested that the leadership of the chief pharmacist was highly influential in terms of research activity among pharmacists employed within their respective organisations and the case study research suggested that organisational culture was also a factor that could influence research activity among pharmacists. It was felt therefore that chief pharmacists would have comparatively more insight into the culture of their organisations

at Trust level and would have more insight into the influence the culture of their organisation had, or had the potential to have, in relation to research activity among pharmacy staff.

Secondly, it was believed that the collective attitudes and opinions of chief pharmacists would carry more gravitas within their professional group. This was important for two reasons: as the findings of the case study research suggested that the chief pharmacists' leadership was influential in terms of research activity among pharmacists, it was felt that to engage more pharmacists with research it was chief pharmacists who would be most likely to be in a position to change local policy within their respective organisations and it was felt that collectively they would also be in a position to influence policy nationally.

Chief pharmacists of mental Health Trusts and other NHS Trusts e.g. community Trusts were excluded as it was felt that the organisational culture of these would be too different to acute secondary care Trusts. Including them would have meant that the population of interest would not have been homogenous. The survey was limited to chief pharmacists of secondary care NHS Trusts in England for the same reason as the case study sites were geographically restricted to those in England, which was because of the variations in the models of healthcare in the devolved nations.

NB Chief pharmacists who participated in the case study research were excluded from the survey phase of the research as it was felt that their responses may have biased the results.

Identification of participants

The intention was for the survey to be available to chief pharmacists of all acute secondary care NHS Trusts in England. The sampling frame i.e. the list of population members from which the sample was drawn (Bowling 2014) was therefore the same as the population of interest. Rather than using a sampling strategy to identify a sample of chief pharmacists, the survey was more akin to a 'census' i.e. a study of every member of a given population (Gray 2014).

To identify potential survey respondents, an invitation to participate was placed in the NHS England and NHS Improvement (NHSEI) Chief Pharmacists' monthly newsletter by the Director of Hospital Pharmacy at NHSEI. The Director of Hospital Pharmacy at NHSEI therefore acted in the capacity of a gatekeeper in that they allowed me access to the chief pharmacists of acute secondary care Trusts in England (Creswell 2014). This approach was used because a list of chief pharmacists of these types of Trusts was not available in the public domain.

9.1.2 Data collection

As the purpose of undertaking the survey was to measure the occurrence of certain phenomena in a population of interest, the intention was to collect mostly quantitative data. For this reason a structured questionnaire i.e. a questionnaire comprising the use of fixed questions presented in the same way with no variation in question wording and with mainly pre-coded response choices, was appropriate to use as the survey instrument (Bowling 2014).

Data was collected via a self-administered questionnaire i.e. a questionnaire which respondents completed themselves, as opposed to using structured interviews i.e. where the interview schedule is administered by an interviewer either face-to-face or by telephone. This was primarily because structured interviews undertaken either by telephone or in person would have been impractical due to the high number of potential respondents, and correspondingly large amount of time which would have been required to undertake the interviews. The wide geographical dispersion of potential participants would also have meant that face-to-face interviews were not a viable option due to the time and cost of travel (Bryman 2012).

A web-based survey was chosen to distribute the questionnaire, as opposed to a postal survey, as online surveys are cheaper and more convenient to administer. Using a web-based survey also allowed respondents' answers to be downloaded into a database, eliminating the need to code the data and thereby reducing the likelihood of errors in the data processing, as well as

saving time. A web-based survey was also selected to distribute the survey over other online methods, such as an email survey where a questionnaire is embedded in the email itself or sent as an attachment, to again assist with the speed and accuracy of data analysis as they too do not allow respondents answers to be downloaded into a database and therefore rely on manual data entry to analyse the results (Robson 2011, Bryman 2012). In addition, a web-based survey offered the advantage over an email survey of allowing the use of filter questions to enable some questions to be automatically skipped by respondents where appropriate (Bryman 2012, Gray 2014).

The questionnaire developed to collect the survey data was based on the findings of the case study research. Concepts identified from the case study research findings were used to develop the indicators included in the questionnaire (Calnan 2013). The questionnaire comprised only closed questions i.e. questions where respondents were required to select one or more responses from a number of alternative answers (De Vaus 2014). In terms of the types of response alternatives provided, checklist response formats, binary choice formats and multiple choice formats were used (De Vaus 2014). Questions with multiple choice formats were of two different types: those where respondents were asked to choose between multiple nominal categories i.e. where the responses had no set order and could not be ranked in any sense from high to low; and those where respondents were asked to choose between ordinal categories i.e. where the responses could be ranked from high to low. To ensure the response alternatives were exhaustive a catch-all category of 'other' was included for some questions with multiple choice and checklist response formats so that respondents could provide their own response if the set of responses provided did not cover all categories. 'Don't know' was not used as a response category to any questions as it was felt that, because research is considered to be part of the professional practice of pharmacists, chief pharmacists would hold opinions in relation to the concepts covered by the survey. To have included a 'don't know' response

category would have introduced the risk of participants selecting this response out of satisficing or 'laziness' (De Vaus 2014).

The questionnaire comprised a mixture of questions relating to their attitudes i.e. questions that tried to establish what respondents thought was desirable, beliefs i.e. questions that tried to ascertain what respondents thought was true, knowledge i.e. questions that tried to discover respondents knowledge of particular facts, and their attributes i.e. questions that were designed to obtain information about respondents characteristics (Dillman 1978). Questions relating to knowledge were only asked where it was felt respondents were likely to have the necessary knowledge to help ensure the validity of the results. Consideration was also given to the wording of the questions to help ensure the validity of the findings. Simple language was used to word the questions to avoid confusion in terms of the meaning of questions and negatively framed questions i.e. questions using 'not' were avoided as they can be difficult for respondents to understand. Leading questions i.e. questions where the question structure or wording pushes people to provide a response they would not have given had the question been asked in a neutral way, were also avoided. The questionnaire was also designed so that there was a logical flow to the questions being asked. In addition, the first question was perceived to be an 'easy' question, with questions deemed more difficult to answer being included later in the survey. A variety of question formats was used to help maintain respondents' interest (De Vaus 2014). The questionnaire was designed in this way to make it as pleasant and rewarding experience as possible for the respondents to help ensure a good response rate to the survey. In addition, the number of questions included was limited to ensure the questionnaire was relatively short to reduce the burden on respondents (De Vaus 2014). For a discussion as to why a good response rate was important in terms of the validity of the research findings refer to section 9.1.5 below. Survey participants were informed that for the purposes of the study the term 'undertaking research' referred to pharmacists carrying out their own research as opposed to managing clinical trials medicines to ensure continuity with

the case study research. For a copy of questions and response formats used in the questionnaire refer to appendix 24.

The questionnaire was created using SurveyMonkey[®], an online questionnaire and survey tool (Bell 2014). SurveyMonkey[®] then created a web address to which potential respondents could be directed to access and complete the questionnaire online.

Before the questionnaire was distributed it was piloted with two ex-chief pharmacists who had recently left their roles either due to retirement or to take up other positions as it was believed that they would have similar characteristics to the survey population (Gray 2014). The decision was made not to pilot the questionnaire with a cohort of chief pharmacists from the population of interest as this would have reduced the sample size for the survey. Consideration was given to piloting the questionnaire with the chief pharmacists who participated in the case study research but it was felt that as a cohort the chief pharmacists who had participated in the case study research would have been less objective in their critique of the questions included in the questionnaire.

As outlined earlier in section 9.1.1, chief pharmacists were invited through an invitation placed in the NHSEI Chief Pharmacists' monthly newsletter. The text included in the newsletter contained a link to the web-based survey, and also directed participants to a document repository where they were able to access a copy of the participant information sheet for this phase of the research. For copies of the email sent to the Director of Hospital Pharmacy at NHSEI which includes the wording for the invitation placed in the chief pharmacists' newsletter, and the participant information sheet for this phase of the research please refer to appendices 25 and 26 respectively. A reminder was placed in the subsequent newsletter to the issue which included the invitation to participate in an attempt to maximise the survey response rate. Further reminders were not placed in the NHSEI newsletters as the first reminder did not increase the number of responses to the survey to a significant degree. It was also not possible

to email non-responders directly as the survey responses were anonymised, and even if they had not been anonymised the email addresses of chief pharmacists of acute secondary care NHS Trusts are not available in the public domain as outlined previously in section 9.1.1. To ensure chief pharmacists who participated in the case study research did not submit a response to the survey, they were individually emailed in advance of the newsletter being distributed, to ask them not to participate in this phase of the research.

9.1.3 Data analysis

Descriptive statistics were used to analyse the data. Descriptive statistics are used to summarise patterns in responses and were therefore appropriate to use to analyse the survey data because the survey was descriptive in nature i.e. it was undertaken to measure certain phenomena in the population of interest (Gray 2014). The use of descriptive statistics therefore enabled patterns in terms of the findings relating to these phenomena to be described.

To analyse responses a coding frame was developed. As the questionnaire comprised closed questions this allowed most responses to be pre-coded before the questionnaire was distributed. For questions with a checklist response format i.e. questions that allowed more than one response each possible response was coded as a separate variable for ease of analysing the data (Smith 2010). For the multiple choice and checklist response format questions where an 'other' category was included in the response categories a coding frame was developed based on participants' responses.

Microsoft Excel was used to help manage the data analysis.

9.1.4 Research ethics and governance

Ethical and governance considerations

For the same reasons outlined in section 8.1.5 for the case study research, the level of risk for participants taking part in the research was relatively low. However, all data collected for the survey was anonymous and no personal information relating to participants was collected. No

steps were required therefore to protect participants' anonymity or to maintain confidentiality of data.

Informed consent was however obtained from participants. To ensure participants gave informed consent a participant information sheet was made available to participants which, like the participant information sheets used in the case study research, detailed the purpose of the research, what was involved, any risks associated with their participation, and information relating to anonymity and confidentiality. Participants were then asked a question as part of the online survey to confirm that they had read the participant information sheet and were voluntarily participating before they could begin the questionnaire. Both the participation information sheet and introductory words to the questionnaire made it clear to potential participants that they were being invited to take part, and were therefore free to decide whether or not they wished to participate. It was therefore made transparent to participants that their participation in the research was entirely voluntary.

Ethics approval

Ethics approval was obtained from Keele University. As outlined in section 8.1.5 to obtain ethics approval for the survey research, an amendment to the approval obtained for the case study phase of the research was submitted. Rather than submitting the amendment to the ethics approval to one of Keele University Ethics Review Panels, however, the application to amend the ethics approval was submitted to the university Faculty of Medicine and Health Sciences Faculty Research Ethics Committee as Keele University ethics service had updated their processes in the time between obtaining approval from the case study phase of the research and approval for the survey phase (Keele University 2019b). Refer to appendix 27 for a copy of the ethics approval letter for the amendment. Following the pilot of the survey questions subsequent amendments were made to the questionnaire which required approval by the ethics committee, and a copy of this ethics approval letter can be found in appendix 28.

Health Research Authority (HRA) Approval

To ensure the survey research complied with the regulations for undertaking research in the NHS, HRA approval was sought. As outlined previously in section 8.1.5, an application to amend the HRA approval obtained for the case study research was submitted to obtain HRA approval for the survey research. A copy of the approval letter for the amendment can be found in appendix 29.

9.1.5 Research validity and reliability

Validity and reliability, as concepts relating to research rigour, were discussed in the context of the case study research undertaken using a qualitative methodology in section 8.1.6. Applying these concepts to quantitative research is however different, and in this section I therefore outline the steps taken to ensure the validity and reliability of the research undertaken in this phase of the research.

In survey research, validity refers to the extent to which the questions collect accurate data relevant to the study objectives. Reliability, on the other hand, relates to the extent to which the findings are repeatable or reproducible (Smith 2010).

To improve the validity and reliability of the questionnaire, as outlined in section 9.1.2, the questionnaire was piloted with two ex-chief pharmacists. Piloting the questionnaire was important as it meant that ambiguous or misleading questions could be detected, and likewise questions that respondents seemed not able to understand could be identified, any of which had the potential to reduce the reliability of the results (Gray 2014, Bryman 2012). Undertaking a pilot was particularly important because the survey was administered as a self-completion questionnaire, meaning that no interviewer was present to clear up any confusion with questions (Bryman 2012). In addition, the validity of questionnaire data depends on shared assumptions and understandings of the questions and response categories. A basic assumption underlying the use of structured questions is that respondents interpret the words, phrases and

concepts in the same way as the researcher, and the question wording, form and order can therefore potentially affect the validity of survey data by affecting responses. Piloting the questionnaire therefore enabled these influences and any subsequent biases in the data to be minimised (Bowling 2014), as well as ensuring that the questions covered all relevant issues identified from the case study research. Following the pilot, the questionnaire was modified to address any issues identified. As outlined previously in section 9.1.2, to help ensure the validity of the questionnaire consideration was also given to the wording of questions to ensure they were easy to understand and were not leading, and questions that relied on participants' knowledge for them to be able to respond were only asked where it was felt that all respondents would have the required knowledge to be able to respond.

Non-response to questionnaires can affect the validity of a surveys by introducing bias as there is an argument that non-responders may differ to responders so that the results do not represent the population as a whole (Smith 2010). As self-administered surveys typically have low response rates (Robson 2011), steps were taken in the survey design and administration to minimise non-response. The questionnaire was designed to be easy to complete and was relatively short to minimise both non-response to the questionnaire as a whole, and non-response to individual questions (Robson 2011). In addition, the newsletter article and the participant information sheet detailed the reasons for the research being undertaken, as well as outlining why potential respondents had been invited to participate and stating how the results would be used. The participant information sheet also addressed issues relating to data confidentiality and anonymity. Furthermore, as the invitation to participate was part of a NHSEI Chief Pharmacist monthly newsletter, it was implicit it had the approval of the Director of Hospital Pharmacy at NHSEI and would thereby encourage chief pharmacists to participate.

Interviewer effects can also affect the validity of surveys. Although undertaking the survey using a self-completion questionnaire, as opposed to structured interviews, should have reduced any interviewer effects (Bryman 2012) chief pharmacists, certainly of Trusts in the

West Midlands, would more than likely have recognised my name due to my role with the NIHR Clinical Research Network. Arguably this may have influenced their responses i.e. this could have introduced some potential for social desirability response bias which could potentially therefore have affected the research validity (Robson 2011). However, as it was made clear to respondents that all responses were anonymised in SurveyMonkey[®], this may have helped to negate any risk of this happening.

9.2 Results

Twenty-two responses to the survey were completed. In England there are 152 acute secondary care NHS Trusts (NHS Confederation 2017). Excluding the four chief pharmacists who participated in the case study research, the sample size for the survey was 148 giving a response rate of 14.9%. All but one participant answered all of the questions. Responses to the incomplete survey are however included in the analysis.

9.2.1 Demographic data

Respondents were asked questions relating to their current personal research activity and previous research experience during their professional career. Their responses are presented below in Table 20 and Table 21 respectively.

Table 20: Chief pharmacists' current research activity (n=21)

Research activity	% (n)
Being conducted as part of a postgraduate clinical qualification	0% (0)
Being conducted as part of postgraduate research qualification	4.8% (1)
Being conducted as part of a postgraduate management qualification	4.8% (1)
Being conducted outside of a formal postgraduate qualification	19.1% (4)
No	71.5% (15)

Table 21: Chief pharmacists' personal research experience during their professional career (n=21)

Research experience	% (n)
Gained as part of a postgraduate clinical qualification	38.1% (8)
Gained as part of postgraduate research qualification	33.3% (7)
Gained as part of a postgraduate management qualification	19.1% (4)
Gained but outside of a formal postgraduate qualification	28.6% (6)
No	23.8% (5)

Most respondents were not research active at the time of the survey being undertaken (15/21, 71.5%). However, the majority (16/21, 76.2%) had personally undertaken research in their professional career.

Respondents were also asked about research activity among pharmacists in their departments. The majority (16/21, 76.2%) reported pharmacists in their department to be actively undertaking research at the time of completing the survey or in the three years previous to the survey being conducted.

9.2.2 Participants' attitudes towards research

Respondents' opinions regarding the importance of pharmacists undertaking research are presented in Figure 8.

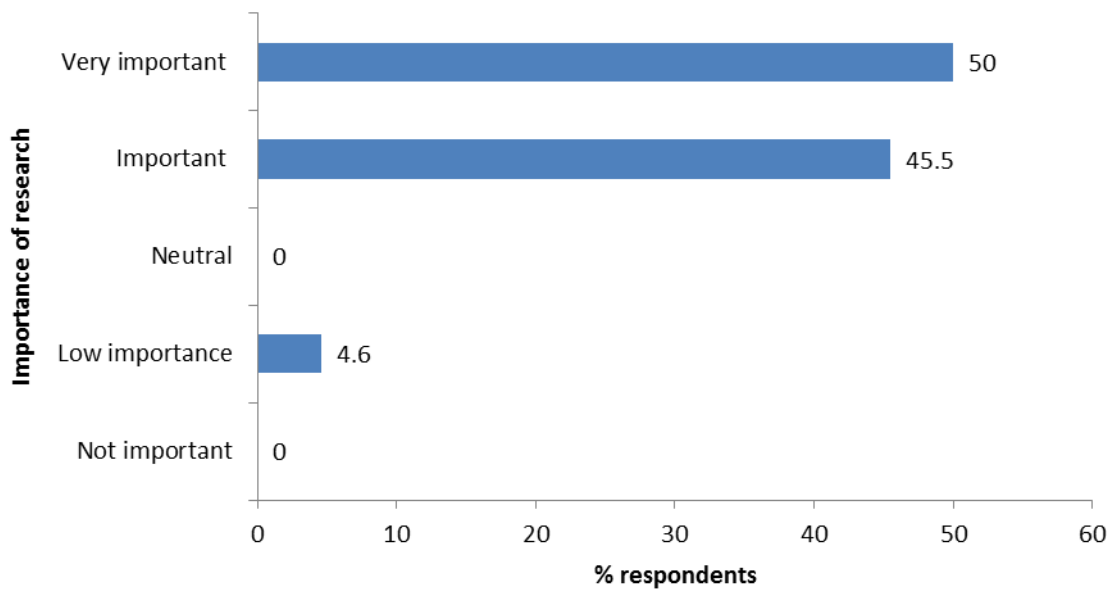


Figure 8: Respondents’ opinions regarding the importance of pharmacists undertaking research (n=22)

The vast majority of respondents (21/22, 95.5%) said they felt it was either very important or important that hospital pharmacists conducted research.

9.2.3 Participants’ attitudes and opinions towards factors perceived to influence research activity

Participants were asked questions pertaining to their attitudes and opinions towards factors perceived to motivate, encourage and discourage research activity among pharmacists, their attitudes and opinions towards factors perceived to be barriers and enablers to research, and the influence of organisational culture on research activity. Their responses to these survey questions are presented in this section. For all of the questions, apart from those relating to respondents’ opinions of the significance of motivating factors and the influence of organisational culture on research activity, participants were invited to select all responses they perceived to apply. They could therefore select multiple responses.

Factors perceived to motivate or encourage research activity

Respondents were asked what they thought was the most significant motivator for pharmacists to undertake research: an individual’s personal desire to undertake research; individuals believing research to be a professional expectation of them as a pharmacist; or individuals believing research to be an expectation or requirement of their role by their employer. Responses to this survey question are presented in Figure 9.

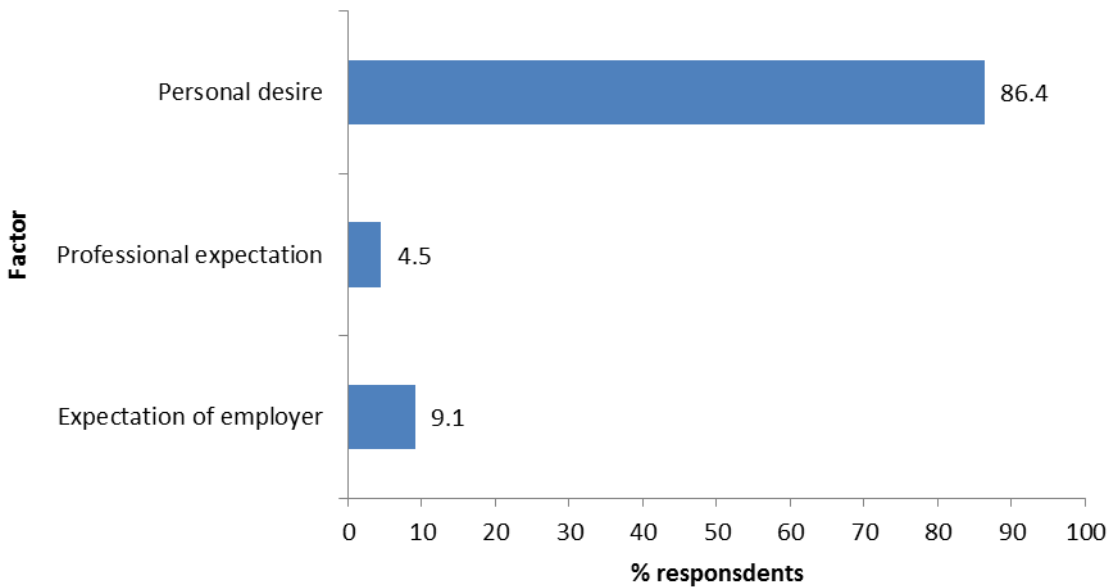


Figure 9: Respondents’ opinions regarding the significance of motivating factors (n=22)

The vast majority of respondents (19/22, 86.4%) were of the opinion that a personal desire to undertake research was the most significant motivator for an individual to undertake research. Only three respondents (3/22, 13.6%) were of the opinion that either research being a professional expectation of being a pharmacist by profession, or research being an expectation or requirement of their employer was the most significant motivator.

Respondents were also asked what factors they perceived would encourage more pharmacists to undertake research, and their responses are presented in Figure 10.



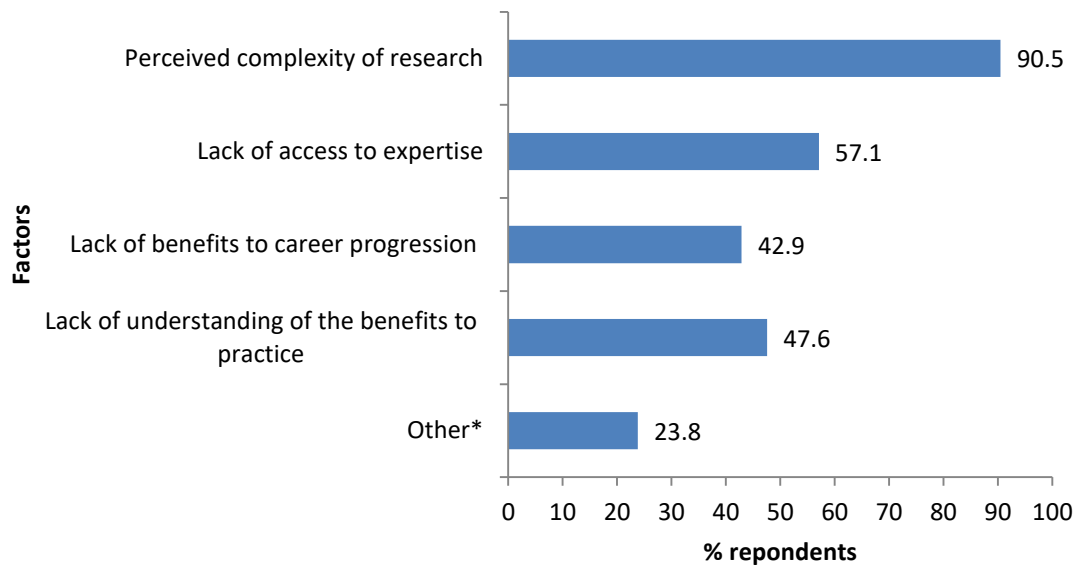
*other: inclusion in job plans; having more funding opportunities; having more time

Figure 10: Factors perceived to encourage research activity (n=21)

Having pharmacists with research experience in the department and more promotion of research opportunities were perceived to be the most likely factors to encourage pharmacists to undertake research as 71.4% (15/21) of respondents felt these factors would encourage activity. More than half also felt that having a pharmacist whose role it was to lead research, and there being a clearer career pathway for those interested in undertaking research would motivate pharmacists to conduct research i.e. 61.9% (13/21) and 57.1% (12/21) respectively.

Factors perceived to discourage research activity

Respondents were asked what factors they felt discouraged pharmacists from undertaking research, and their responses are presented in Figure 11.



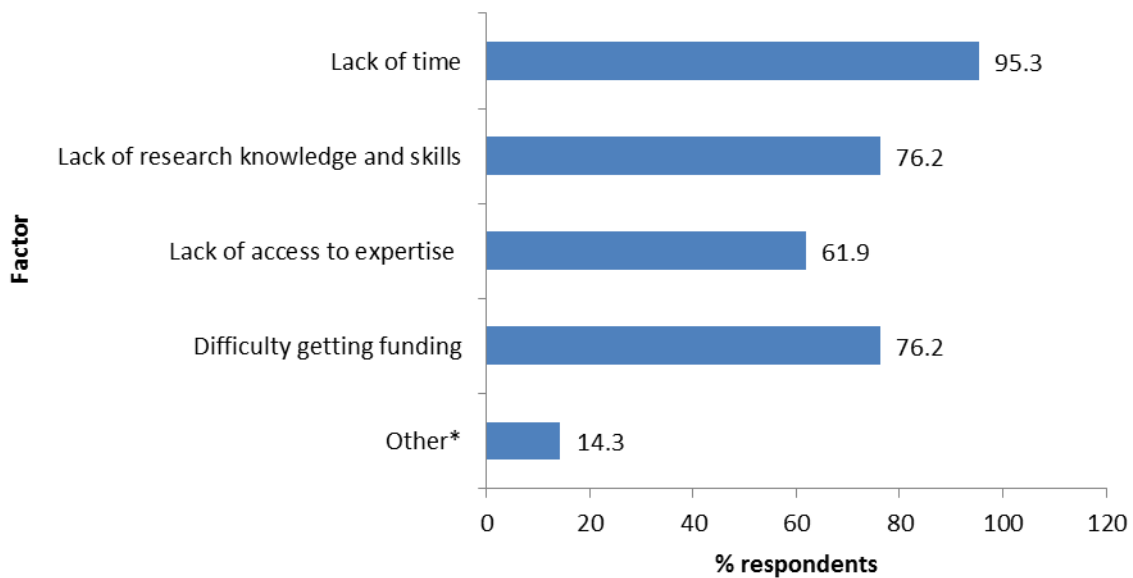
*other: lack of training at undergraduate level; research not integrated into postgraduate qualifications; lack of time in day job; lack of benefits to department; lack of benefits to individual

Figure 11: Factors perceived to discourage research activity (n=21)

The vast majority (20/21, 90.5%) felt research being perceived as difficult to undertake discouraged activity. Lack of access to individuals with research expertise was also felt to discourage activity by over half (12/21, 57.1%) of respondents.

Factors perceived to be barriers to research activity

Respondents were asked what factors they perceived to prevent research activity among pharmacists. Their responses are presented in Figure 12.



*other: lack of prioritisation; lack of time in day job; deflects from clinical role

Figure 12: Factors perceived to prevent research activity (n=21)

All of the barriers to research engagement explored through the survey research were perceived by the majority of respondents to prevent engagement. The vast majority (20/21, 95.3%) felt lack of time was a barrier to research engagement. Most also felt lack of research knowledge and skills, difficulty getting funding and lack of access to research expertise to undertake research to also represent barriers i.e. 76.19% (16/21), 76.19% (16/21) and 61.90% (13/21) respectively.

Factors perceived to be enablers of research activity

Respondents were asked what factors they felt would enable pharmacists to undertake research, and their responses are presented in Figure 13.



*other: employing a lead pharmacist for research; split posts with academia; protected time

Figure 13: Factors perceived to enable research activity (n=21)

Integrating research into pharmacists' roles was the factor most widely perceived to enable research activity among pharmacists i.e. 90.5% (19/21) of respondents identified this to be an enabler. Having more pharmacy-specific funding opportunities, access to individuals with research expertise, and better access to research training were also factors perceived to be enablers by most participants (18/21, 85.7%; 17/21, 80.1%; and 15/21, 71.4% respectively). These findings therefore reinforce the barriers identified in the survey as these enablers represent factors that would overcome the barriers identified.

Influence of organisational culture on research activity

Survey respondents were asked whether they felt the Trust culture and department culture encouraged, discouraged or had no influence on research activity among pharmacist. Responses to these survey items are presented in Table 22.

Table 22: Responses to survey items relating to the influence of organisational culture on research activity (n=22)

Level of culture within the organisation	Influence on research activity among pharmacists % (n)		
	Encourages	No influence	Discourages
Trust	45.4% (10)	31.8% (7)	22.7% (5)
Departmental	59.1% (13)	9.1% (2)	31.8% (7)

In terms of the culture at both Trust and departmental level, the majority (15/22, 68.18% and 20/22, 90.9%) felt these influenced research activity among pharmacists i.e. the culture either encouraged or discouraged activity. However, respondents felt that departmental culture to be more influential on research activity among pharmacists than the Trust culture and, in terms of the influence of the culture at these levels on research activity among pharmacists, more respondents perceived the culture at both Trust and departmental level to encourage rather than discourage activity.

Regarding organisational culture, respondents were also asked to rank the following factors in terms of their significance in determining the research culture of a pharmacy department: research culture at Trust-level; the leadership of the chief pharmacist; staff employed within the pharmacy departments. Responses to this question are presented in Table 23.

Table 23: Significance of factors in determining research activity (n=22)

Factor determining research activity	Respondent's ranking of significance of factor in determining research activity (1=- most significant; 3= least significant) % (n)		
	1	2	3
Research culture at Trust-level	22.7% (5)	31.8% (7)	45.5% (10)
Leadership of chief pharmacist	40.9% (9)	45.5% (10)	13.6% (3)
Staff employed in pharmacy department	36.4% (8)	22.7% (5)	40.9% (9)

Similar numbers of respondents ranked the leadership of the chief pharmacist and the staff themselves as the most significant factor determining research activity among pharmacists (9/22, 40.9% and 8/22, 36.4% respectively). More respondents ranked the leadership of the chief pharmacist as the most or second most significant factor determining research activity when compared to those who ranked the staff employed in first or second place i.e. 86.4% (19/22) compared to the 59.1% (13/22). The research culture at Trust-level was perceived to be the least significant of the three factors in terms of determining research activity among pharmacists as 45.5% (10/22) ranked it as least significant, and only 22.7% (5/21) ranked it as the most significant.

9.2.4 Participants' perceptions of pharmacists competence to undertake research

Respondents were asked whether they felt newly-qualified pharmacists had the knowledge and skills to undertake research. The majority felt pharmacists lacked such knowledge and skills at this stage of their career (16/21, 76.2%).

The sixteen respondents who felt newly-qualified pharmacists did not have the necessary knowledge and skills to undertake research were then asked how they felt additional training should be delivered after pharmacists had graduated from their undergraduate degree. To

answer this question they were asked to rank the following methods of delivering research training in terms of their preference: in-house research training (i.e. training delivered within the pharmacy department); incorporating research into pharmacists' postgraduate clinical training; and pharmacists undertaking postgraduate research qualifications. Responses to this question are presented in Table 24.

Table 24: Methods for delivering additional research training (n=16)

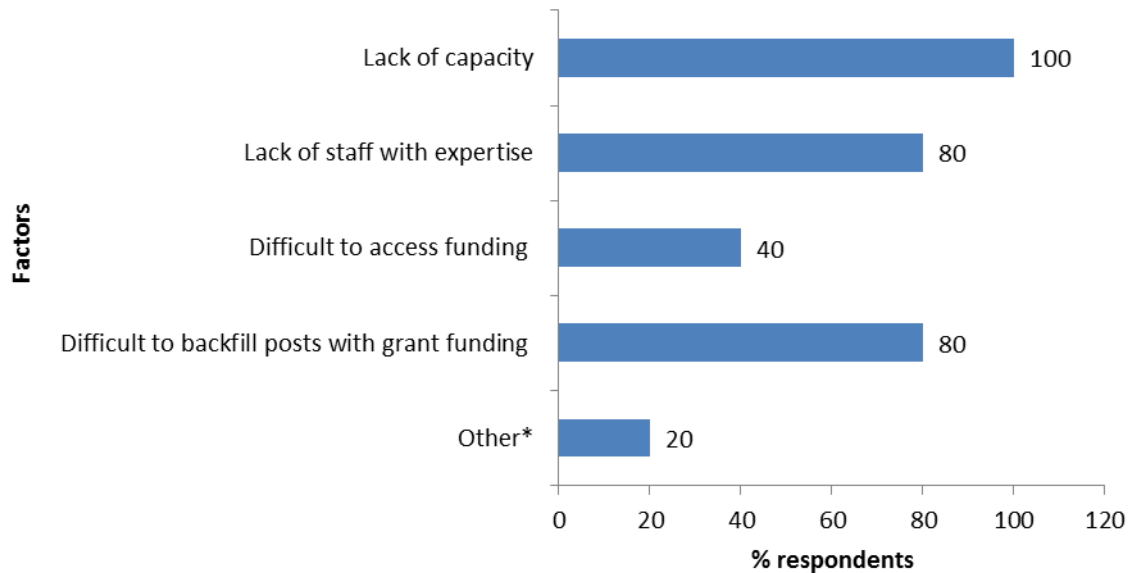
Methods to deliver additional research training	Respondent's preference of methods (1= most preferred method; 3= least preferred method) % (n)		
	1	2	3
In-house research training	12.5% (2)	37.5% (6)	50.0% (8)
Incorporating research into postgraduate clinical training	75.0% (12)	18.8% (3)	6.3% (1)
Undertaking postgraduate research qualifications	12.5% (2)	43.8% (7)	43.8% (7)

Incorporating research into pharmacists' postgraduate clinical training was the most preferred method to deliver additional research training to pharmacists with 75% (12/16) of respondents ranking this as their first preference. Research training delivered in-house and pharmacists undertaking postgraduate research qualifications were similarly rated as only two respondents (2/16, 12.5%) ranked in-house training as their most preferred method and the same number of respondents (2/16, 12.5%) ranked postgraduate research degree as theirs.

9.2.5 Chief pharmacists' perceptions of their ability to support research within their respective departments

Respondents were asked whether they personally felt able to support research activity within their department, and the majority (17/22, 77.2%) felt they were. The five respondents who felt they were unable to do so were asked a follow up question to find out the reason they felt

this to be the case. Their responses are presented in Figure 14. For this question respondents were invited to select all responses they perceived to apply and were therefore able to provide multiple responses.

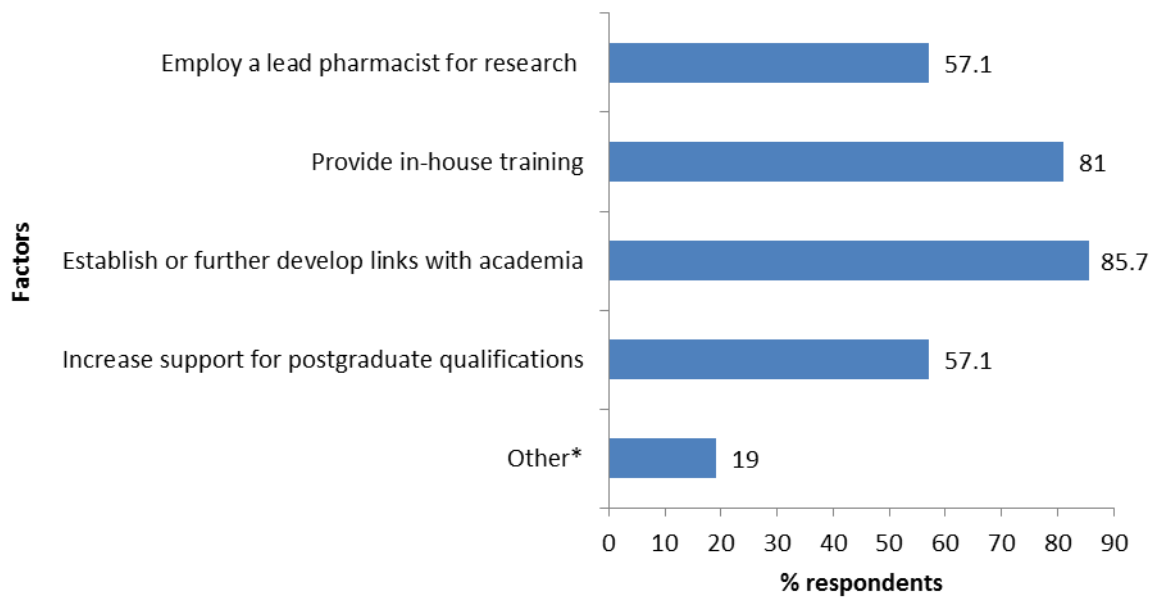


*other: lack of support

Figure 14: Factors identified by chief pharmacists as contributing to them feeling unable to support research activity (n=5)

All respondents said their department lacked the capacity to allow pharmacists to undertake any other activities other than to deliver the core service. The vast majority (4/5, 80%) also felt a lack of staff with research expertise and difficulty in backfilling posts with grant funding meant they were unable to support research activity.

All respondents were asked what measures they would put in place to develop or increase research activity among pharmacists in their department. Their responses are presented in Figure 15. Similar to the previous survey question, respondents were invited to select all responses they perceived to apply and were therefore able to provide multiple responses.



*other: promote research activity within the department; give pharmacists protected time to undertake research; support pharmacists to undertake research qualifications; have a research strategy

Figure 15: Measures chief pharmacists felt would increase research activity (n=21)

To develop or increase research activity the vast majority of respondents (18/20, 90%) said they would establish or further develop links between their department and academia. 80% (16/20) also said they would provide staff with in-house training in research skills. However, only 60% (12/20) said they would support staff to undertake postgraduate qualifications or employ a pharmacist whose role it was to lead research.

10 Discussion

In this chapter the findings of the case study research and survey research are discussed in the context of the research objectives stated in section 5.2.

10.1 Drivers, drawbacks, barriers and enablers to pharmacists undertaking research

In this section the findings relating to participants' perceptions of the drivers, drawbacks, barriers and enablers to hospital pharmacists undertaking research are discussed. For each of these key themes, the findings are discussed as follows: the case study findings are compared to those of the initial study; the survey findings are compared to the case study findings; the case study and survey findings are compared to the published literature.

10.1.1 Drivers

Regarding drivers to pharmacists undertaking research, the themes identified from the case study research fell into two categories: those relating to the individual referred to as personal drivers, and those relating to either the organisation or the profession referred to as external drivers.

Comparison of the case study findings to the initial study findings

In terms of the personal drivers, compared to the initial study findings job satisfaction and research experience emerged as new themes from the case study research. However, several other personal drivers identified in the case study research had also been cited previously in the initial study. These included personal professional development, personal kudos, and having a personal desire to change practice. Interesting to note was that the reasons for personal kudos and personal professional development motivating pharmacists to undertake research cited in the case study research were different to those in the initial study. In the initial study, personal kudos appeared to be related to the accolade of gaining a postgraduate qualification, as did professional development, in that participants perceived career

progression to be related to possession of such qualifications. In the case study research however, individual recognition gained through having research published was cited in the context of personal kudos. Similarly, in the context of professional development, reference was made to the research skills and transferable skills gained through research contributing to career progression rather than the possession of a postgraduate qualification. Participants in the case study research therefore appeared to perceive the benefits of research experience to be more far reaching than those in the initial study, which is perhaps attributable to those who took part in the case study research being more research experienced through either having conducted research themselves and/or being the chief pharmacist of a research active pharmacy department. This might also explain why job satisfaction and research experience were identified as drivers in the case study research but not in the initial study.

With regard to external drivers, some themes identified in the case study research were the same as those identified in the initial study. Organisational culture, organisational reputation and the need for evidence from research were identified as external drivers in both the case study research and the initial study, albeit in the initial study the need for evidence from research was referred to as improving services for patients. However, the case study research offered more insight or a different perspective in relation to organisational culture being a driver compared to the initial study. In the case study research this related mainly to departmental culture as no reference was made to the Trust culture driving research activity among pharmacists per se whereas in the initial study the organisational culture at Trust level and departmental level both appeared to drive engagement. However, new themes also emerged from the case study research which were not apparent in the initial study findings. Of these new themes, some related to the organisation (i.e. income generation, research being an expectation of the employer, departmental leadership, and departmental role models) while other themes related to the profession (i.e. research being an expectation of the profession and the perceived association or relationship between research and the reputation of the

profession itself). I would suggest that income generation and research being an expectation of the employer to be new themes because again the case study participants were more research experienced on a personal level and/or were the chief pharmacist of a research active pharmacy department and were therefore more likely to be aware of these factors compared to the initial study participants who were mostly research-naïve. Departmental leadership and departmental role models may be new themes in the case study research because at all of the case study sites a pharmacist was employed with responsibility to lead research and all of the pharmacy departments were research active. Those who participated in the case study research had personal experience therefore of working in environments where departmental leadership for research and role models were present. This was not the case in the initial study as research activity among pharmacists was described at only two of the six Trusts represented by chief pharmacists, and none of the chief pharmacists interviewed made reference to having employed a pharmacist whose role was to lead research.

Research being a professional expectation was also identified as an external driver in the case study research but was not apparent in the initial study. This may again have been due to participants in the case study research being more research experienced when compared to those who took part in the initial study. However, it may also have been due to the time lapse of around two years (between May 2016 and early 2018) between data collection for the initial study and the case study research. In the intervening period, the Royal Pharmaceutical Society (RPS) Faculty may have been promoted within the profession which may have raised awareness among members that research was an expected part of their professional practice with research as evaluation is one of the clusters of the Advanced Pharmacy Framework on which RPS Faculty Membership is based. Likewise, the RPS Foundation Pharmacy Framework may have also been promoted in this timeframe. In relation to research being an expectation of the employer, it was interesting that, in the case study research, chief pharmacists perceived research experience to be a requirement to attain a very senior position within the

management structure in secondary care. However, although career progression was cited as a personal driver to engagement, several in the pharmacist participant group believed it was possible to attain a pharmacist post banded at NHS Agenda for Change Band 8 without research experience. The dichotomy between the groups may suggest that chief pharmacists perceived there to be a ceiling effect to how far a hospital pharmacist could progress in their NHS career without research experience that lower graded staff were perhaps not aware of. Regarding research being either a professional expectation or an expectation of their employer, it is also interesting to note that, consistent with the initial study findings, participants in the case study research seemed to lack awareness of there being a requirement to undertake research in the NHS and no direct references were made to this or any of the related policy documents. However, unlike the initial study, case study participants were aware of the inclusion of research in NHS Agenda for Change role outlines for pharmacists employed at Band 8a or above. Likewise, although the RPS Faculty and Foundation and Advanced Level Frameworks were cited in the case study research, no references were made to the requirement to undertake research outlined in the RPS Standards for Hospital Pharmacy Services which was a finding similar to that found in the initial study. The extent to which engagement with research was being driven through research being an expectation of pharmacists employed in the hospital sector, either because research was an expectation of them as an NHS employee or because research was a professional expectation, was therefore unclear.

Some of the initial study findings were not apparent in the case study research. For example, although the findings of the initial study appeared to suggest that having a research strategy at Trust or departmental level was a driver for research among pharmacists, the findings of the case study research did not support this theory as no participants cited research strategies at either level as driving research activity. Not only this, none of the case study sites had a standalone departmental research strategy. However, at three of the four case study sites

participants made reference to research being part of the departmental strategy or business priorities. The lack of standalone research strategies at the case study sites may have been due to the pharmacy departments at all four sites being research active which meant there was no need for a standalone strategy at any of the sites. In contrast, those chief pharmacists interviewed for the initial study who made reference to research strategies were actively looking to increase research activity levels within their departments. Likewise, at Trust level, although research strategies appeared to exist at several of the case study sites, as no reference was made to these directly influencing research activity among pharmacists at any of these sites, it can be inferred from the case study research that Trust-level research strategies did not appear to be directly driving research activity among pharmacists.

Comparison of the survey findings to the case study findings

In relation to external drivers for research, the survey findings aligned with the findings of the case study research in that departmental leadership for research and departmental role models were perceived by the majority of survey respondents to encourage research activity among pharmacists (Figure 10). Regarding research being an expectation of an individual's role, this appeared less so to be perceived to encourage activity as only around half of respondents identified the inclusion of research in pharmacists' appraisals and job descriptions as drivers.

The influence of organisational culture on research activity was also explored through the survey. In the case study research, organisational culture at both Trust and departmental levels were identified as drivers for research engagement, with departmental level culture perceived to be more influential than the culture at Trust level. The survey research supported this finding in that more respondents felt the culture at departmental level was encouraging of research compared to the Trust culture (Table 22). Interestingly, a sizable proportion of survey participants also felt that both the Trust culture and departmental culture discouraged research activity among pharmacists which, although a similar finding to the initial study, was not similar to the case study findings as no participants in the case study research described the culture at

either Trust or departmental level as discouraging of research. A possible explanation for this may be that the chief pharmacists who participated in the survey phase of the main research study and in the initial study represented a mixture of pharmacy departments that were research active and departments that were not, whereas in the case study research all departments were research active. As a result, some participants in both the survey research and initial study may have felt the Trust or departmental culture not to be encouraging of research. However, slightly contradictory to this explanation for the difference between the survey results and the case study findings, was that the majority of departments represented by the chief pharmacists who participated in the survey were research active i.e. the majority of survey respondents (76.2%) said pharmacists in their department were either undertaking research at the time of the survey being conducted or in the preceding three years. Levels of research activity among pharmacists in those departments represented by participants were not explored through the survey research and, as case study sites had been selected based on their high levels of research activity among the pharmacists employed, it is reasonable to assume that levels of activity within the research-active departments represented by survey participants may have been comparatively lower than those at the case study sites. Perhaps most significant though is the relatively low response rate to the survey which means it is difficult to determine the representativeness of survey respondents to the population of interest. Survey respondents were a self-selecting group and those who responded may therefore have been those most interested in or passionate about the importance of pharmacists undertaking research. Certainly the vast majority of those who did respond (95.5%) felt it was either very important or important that pharmacists engaged with research (Figure 8), which would support this idea that those who participated were those who felt strongly that pharmacists should undertake research. If this was the case, respondents who represented departments with no or low research activity levels may have felt their

departmental culture discouraged research among pharmacists. Likewise they may have been more likely to feel their Trust culture was discouraging of research.

Personal drivers for research engagement identified in the case study research were not specifically explored through the survey. However, having a personal desire to undertake research was overwhelmingly identified from the survey research to be the most significant motivating factor for pharmacists to undertake research compared to research being a professional expectation or an expectation of an individual's employing organisation (Figure 9). It could also be argued that the survey findings supported the finding of the case study research that having research experience was a driver for individuals to undertake further research in their careers as the majority of respondents (76.2%) were research experienced i.e. they had undertaken research in their professional careers (Table 21) and almost a third (28.5%) were undertaking research at the time of the survey (Table 20).

Comparison of the research findings to the literature

Similarity was evident in the drivers identified in the case study research to the motivational factors for pharmacists to participate in research cited in the literature. For example, inclusion of research as a requirement of an individual's role as a driver had previously been identified in the literature (Lee et al. 2018, Lowrie et al. 2015), as had job satisfaction (Carr et al. 2011). Likewise, the suggestions to increase engagement with research by linking research to career progression and including research in appraisals as identified by Lowrie et al (2015), were also cited in the case study research. However, perhaps more significant was the survey finding that personal desire to undertake research was perceived to be by far the most significant motivator. This aligns with the observation that *'those who had managed to incorporate research into their job roles had drawn on their internal drive to conduct research'* (p.11) reported by Lowrie et al. (2015). This suggests that, to increase engagement among members of the profession, more needs to be done at both professional level and organisational level to drive activity to overcome this reliance on individual desire.

In addition to there being similarity with the motivating factors and other factors perceived to encourage activity cited in the literature, the reasons for research being important reported in the literature are also very similar to those cited as drivers or motivating factors in the case study research. For example, the reasons for the importance of research cited in the literature, such as improving practice and patient care (Lowrie et al. 2015, Awaisu, Alsalimy 2015, Fakeye et al. 2017, Sarwar et al. 2018, Sultana et al. 2016), research being a professional responsibility or part of professional practice (Bhagavathula et al. 2017, Fakeye et al. 2017, Awaisu, Alsalimy 2015, Sultana et al. 2016), and research being important to professional standing (Lowrie et al. 2015), were all identified in the case study research. Career progression was also cited in the literature as a reason why engagement in research was important (Bhagavathula et al. 2017, Awaisu, Alsalimy 2015). This was also cited in the case study research in the context of personal professional development. However, some motivating factors reported in the literature were not identified in the case study research. Personal interest in a research area (Awaisu, Alsalimy 2015, Lowrie et al. 2015) and learning about disease management (Peterson et al. 2009, Simpson et al. 2001, Sultana et al. 2016, Fakeye et al. 2017, Lee et al. 2018), are examples of motivating factors identified in the literature but not in the case study research. Although participants did not directly cite these factors, I would argue that they were cited indirectly as reference was made by some participants to them being regarded as an expert in their field driving them to want to undertake research in the context of personal kudos being a driver. Likewise, gaining a postgraduate qualification was cited by Lowrie et al. (2015) as being a motivating factor. Again this was not a finding of the cases study research although personal professional development was, and I would argue that gaining postgraduate qualifications is inherently perceived to be part of professional development.

Research experience was a new theme to emerge from the case study research not found in the literature. However, two previous studies had compared levels of interest in research among those with prior research experience and those without, and in both instances levels of

interest in future research had been found to be higher among those with experience (Saini et al. 2006, Sultana et al. 2016). Therefore, I would suggest that although research experience being a driver for engagement was identified as a new theme, it is consistent with the findings of previous studies. Other drivers identified in the main research study and not previously cited included departmental leadership and role models, research being good for an organisation's reputation, the association between research and income generation, and the organisational culture at Trust level and departmental level all having a role to play in influencing research activity among pharmacists. I would suggest these all to be apparent in the case study research but not previously cited in the literature for similar reasons to some not being apparent in the initial study i.e. because all of the case study participants worked within or were the chief pharmacist of pharmacy departments with high levels of research activity, and, therefore, had experience of working in environments where these factors were present. Recognition of research being a professional expectation was also a factor not previously cited although research being a professional responsibility had been identified in the literature in relation to why undertaking research was important for the profession (Awaisu, Alsalimy 2015). Likewise, professional kudos was identified in the case study research as a driver for research participation and the importance of research to professional standing had previously been cited in the context of the importance of research (Lowrie et al. 2015).

10.1.2 Drawbacks

Like the drivers for pharmacists to undertake research, the perceived drawbacks to research engagement identified through the case study research fell into the same two categories i.e. personal drawbacks relating to the individual and external drawbacks relating to the organisation.

Comparison of the case study findings to the initial study findings

No drawbacks to engagement were identified in the initial study meaning the findings of the case study research cannot be compared directly to those of the initial study.

Comparison of the survey research findings to the case study findings

Some of the drawbacks identified in the case study research were explored through the survey research albeit in the context of factors perceived by chief pharmacists as contributing to them not being able to support research activity in their respective departments. Difficulty backfilling posts with grant funding was identified by the majority of respondents to be a factor they believed prevented them from feeling able to support research activity within their department. One participant in the survey research also identified research as deflecting from pharmacists' clinical roles as a factor preventing research activity. It can therefore be argued that these survey findings align to the drawbacks identified in the case study research relating to difficulty backfilling posts with grant funding and the impact on service delivery associated with pharmacists undertaking research.

Comparison of the research findings to the literature

None of the studies identified in the literature specifically explored the drawbacks to pharmacists engaging with research. A direct comparison of the main study research findings to the literature cannot therefore be made. However, some of the drawbacks identified in the case study research relate to perceived barriers to engagement identified in the literature. For example, lack of capacity (Horák et al. 2018) was identified as a barrier to engagement in the literature which has some similarity to the external drawback relating to the impact on service delivery associated with research identified in the case study research. Likewise, lack of remuneration (Crilly et al. 2017) was identified as a barrier in the literature which could be argued aligns to the personal drawback identified in the case study research relating to reduced income being associated with research. My thoughts are that participants in the case study perceived these to be drawbacks rather than barriers because they were research experienced and that these factors had therefore not prevented their engagement with research. Rather than perceiving them to be barriers to be overcome, they viewed them instead as downsides to research.

10.1.3 Barriers

Barriers to engagement identified by the case study research again fell into the same two categories as the drivers and drawbacks i.e. personal barriers relating to the individual and external barriers relating to either the organisation or profession.

Comparison of the case study findings to the initial study findings

Concerning external barriers, consistent with the findings of the initial study, barriers relating to time, funding, and accessing support were identified. Organisational culture was also identified as another external barrier. However, compared to the initial study findings, the case study research offered more insight or a different perspective in relation to all of these. In the context of time presenting a barrier to engagement, in both the initial study and the case study research, lack of time to undertake research appeared to be related to competing demands of the day job. Therefore in both studies lack of time did not appear to be a barrier to research specifically, but a barrier to any activities perceived to be outside core duties. However, the case study research offered greater insight as lack of time was identified to be more of an issue for those in more junior roles due to their clinical commitments. Also apparent from the case study research was that lack of time appeared to be compounded by several other factors including the time consuming nature of applying for funding and the time consuming nature of research itself. Reference was also made to the long time frames associated with the research ethics and governance processes, to the extent that some participants appeared to call into the question the value of undertaking research of an academic nature. Similarly lack of funding was identified as a barrier in the initial study whereas in the case study research it was more specifically difficulty obtaining funding and lack of pharmacy specific funding which were identified. Also consistent with the initial study, access to support was identified as a barrier in the case study research but this appeared to be specific to accessing internal support for research within the Trust. Reference was not made to difficulty accessing support at

departmental level or through academic links to universities which the findings of the initial study suggested were barriers.

These differences in the findings of the case study research compared to the initial study in relation to the factors identified as contributing to time and funding being barriers perhaps reflect the fact that, as cited earlier in section 0, participants in the case study research were more research experienced than those in the initial study. Case study research participants were therefore more likely to have personal experience of applying for research funding and ethics and governance approvals, and therefore have experienced difficulties in relation to such applications. However, as the finding that difficulty accessing support at departmental level or through academic links was identified in the initial study but not in the case study research, I would suggest is more likely to be a consequence of those in the case study research working in research-active departments where support mechanisms were already in place than to be because case study research participants were more research experienced compared to those in the initial study. Indeed all four case study sites were selected on the basis that their pharmacy departments were research active and had models of support for pharmacists to undertake research.

With regard to organisational culture being a barrier, the findings of the case study research and initial study were again similar. Research was not perceived to be a core part of pharmacists' roles in either study and in both studies was illustrated by a suggestion that there was an expectation for pharmacists to undertake research in their own time. In both studies, lack of prioritisation of research at departmental level was also cited as another barrier to engagement, with reference made to clinical services taking priority as the reason. In the case study research lack of managerial support was also reported as a barrier in the context of organisational culture, and similarly was perceived to be due to research not being perceived to be part of the core pharmacy service. Research therefore appeared to be deprioritised at both a day-to-day level and at a more strategic level within the department in favour of delivery of

the core clinical service. Lack of managerial support was not a finding of the initial study which, I would suggest may be due to those who participated in the case study research being more research-experienced and therefore more likely to have personally experienced this to be a barrier.

Regarding the personal barriers identified in the case study research, once again there was a high degree of similarity between the findings of this phase of the research and the initial study. Lack of confidence was identified as a barrier in both studies, and the reasons for this were the same i.e. pharmacists were fearful of undertaking research and perceived research to be complex to undertake. Lack of competence was also identified in both studies, but so too was a perception that pharmacists had a latent ability to undertake research. Reference to this latent ability was in relation to the level of skill required to conduct research and the scientific approach required since participants in the case study research made reference to pharmacists being familiar with the practice of evidence-based medicine.

Lack of awareness and understanding was also a theme identified in both studies, and the reason for this preventing engagement was multifactorial. However, more insight as to why this was a barrier was found in the case study research as not only were more factors identified as contributing to this but, in relation to the factors consistent in both, the case study research findings offered more insight into why some represented barriers. For example, although a lack of understanding of the benefits of research to pharmacy practice was a finding in both studies, in the case study research a lack of appreciation of the value of research in practice was perceived to contribute to this and was attributed to a disconnect between the research undertaken by academia and practice. The reasons for this disconnect included a perception of academic research not being relevant to practice, differences in the types of journals in which researchers were looking to publish their work, and the long timescales associated with academic research impacting on the use of such research in practice. Interestingly, a lack of appreciation of the value of research was identified as a barrier in the case study research

despite there being a recognition among participants that pharmacists routinely practiced evidence-based medicine. Although not explicit from the interviews, this could suggest that pharmacists see evidence-based medicine and the use of clinical trials data relating to the use of medicines as being distinct from using practice-based research to inform service delivery.

Pharmacists lacking a fundamental understanding of research, lacking awareness of research opportunities, the personal benefits of research, and different types of scientific inquiry were also identified as factors contributing to lack of awareness and understanding being a barrier in the case study research but not in the initial study. Some of these factors may not have been apparent in the initial study for the reason as given earlier in relation to the drivers and barriers i.e. that the case study participants were employed in research active departments. For example, participants in the initial study may have been unaware of the existence of research opportunities whereas those in the case study research appreciated their awareness of such opportunities because they were employed in a research active department. This was illustrated by reference being made in the case study research to research opportunities being promoted within departments. In relation to the other factors identified in the case study research but not in the initial study, although some were not cited in the initial study per se, they were nevertheless apparent. For example in relation to insufficient personal benefits, lack of career progression and career pathways were identified as contributing to this in the case study research which align with the absence of research in career structures and limited financial gains associated with research cited as barriers to engagement in the initial study. Similarly, the finding of pharmacists lacking an understanding of the different forms of scientific inquiry, was also evident in the initial study as some of the chief pharmacists who participated were unable to distinguish between audit, evaluation and research. Likewise, a perception that research was the only type of inquiry that could be published was similar to the finding of the initial study where authorship of publications was perceived to be synonymous with research.

Interestingly, some of the barriers cited in the initial study were not apparent in the case study research and included a perception of research being 'risky' and a lack of engagement between universities and Trusts. Presumably these were not cited in the case study research because participants were research-experienced and therefore not afraid of conducting research that may have negative findings and because at all of the case study sites the pharmacy departments were engaged with local universities either through formal or informal arrangements. Confusion between research-related activities that constituted support of research delivery rather than undertaking research, such as managing clinical trials medicines, was also apparent in the initial study but not in the case study research. Again I would suggest this was because all participants in the case study research had either undertaken research themselves or were the chief pharmacist of a research active pharmacy department and so understood the difference.

Comparison of the survey findings to the case study findings

In line with the case study research, the survey also found that lack of time was the most commonly perceived barrier as over 95% of respondents perceived this to prevent pharmacists undertaking research (Figure 12). Similar findings were found when chief pharmacists were asked why they felt unable to support research activity within their respective departments. Although the numbers were small (n=5), all respondents said a lack of capacity for pharmacists to undertake activities other than delivering the core service prevented engagement (Figure 14). Lack of research knowledge and skills and difficulty obtaining funding were also perceived by survey respondents to be barriers and the survey findings therefore also aligned with those of the case study research. The case study finding that lack of understanding of research was a barrier to engagement was also supported by the survey as respondents perceived pharmacists 'having a better understanding of what research is' to be an enabler (Figure 13).

Factors perceived to discourage research activity were also explored in the survey research, and again the findings were also consistent with the case study research. Research being

perceived to be difficult to undertake was identified by the vast majority (90.5%) of respondents and although fewer respondents perceived lack of understanding of the benefits to pharmacy practice and lack of perceived benefits to career progression to discourage activity, nevertheless both were identified as factors which discouraged activity by just under half of the participants (Figure 11). Several responses were also provided to the 'other' category to the survey question relating to the factors which discouraged activity, suggesting there to be breadth of reasons for pharmacists being discouraged from undertaking research.

Lack of access to individuals with research expertise was perceived to prevent engagement in the survey, being identified as both a barrier to engagement and a factor which discouraged activity (Figure 12 and Figure 11 respectively). However, this finding did not support the case study research findings per se, as lack of access to individuals with research expertise was not identified in the case study research to be a barrier to engagement since all the case study sites had an individual with research expertise.

Comparison of the research findings to the literature

In terms of the case study findings relating to the barriers of lack of funding and difficulty accessing support, similar themes were identified in the case study research to those previously reported in the literature, but the case study research gave more insight or offered a different perspective. For example, although difficulty accessing funding (Shitu et al. 2019) and lack of funding (Awaisu, Alsalimy 2015, Abubakar et al. 2018, Fakeye et al. 2017, Zeidan et al. 2019) had been previously identified as barriers, the time consuming nature of grant applications and the high failure rates of such applications were a level of detail not cited elsewhere in the literature. Similarly, although lack of support had been reported previously in the literature as a barrier (Awaisu, Alsalimy 2015), difficulty accessing support from Trust R&D departments identified in the case study research was a level of detail that had not previously been reported. Likewise, lack of time had been previously cited in many studies (Awaisu, Alsalimy 2015, Lowrie et al. 2015, Abubakar et al. 2018, Crilly et al. 2017, De Vera et al. 2018, Sultana et

al. 2016, Lee et al. 2018, Shitu et al. 2019, Zeidan et al. 2019, Kuipers et al. 2019), but the time consuming nature of research itself compounding the issue had not been reported. Also in relation to lack of time being a barrier, the case study research findings give further credence to other findings previously reported in the literature. For example, the case study research finding that a lack of time presented a barrier in the context of the competing demands of the day job aligns with other workload priorities presenting a barrier to engagement previously cited in the literature (Lee et al. 2018). In addition, as those who participated in the case study research were either research active at the time of the case study research being undertaken, or had been in the preceding three years, I would also suggest that the case study research findings give credence to the suggestion made in several previous studies that pharmacists interested in undertaking research would be willing to find time to do so (Fakeye et al. 2017, Crilly et al. 2017, Kuipers et al. 2019, Sultana et al. 2016).

In terms of how the case study research and survey findings regarding organisational culture relate to the published literature, the findings are again consistent in that lack of priority (Lowrie et al. 2015), lack of managerial support (Lowrie et al. 2015, Abubakar et al. 2018, Crilly et al. 2017, Sarwar et al. 2018), and organisation culture itself (Lowrie et al. 2015, Stewart et al. 2015) have all been cited previously as factors preventing engagement. The case study research findings also give credence to the suggestion previously reported in the literature that, rather than lack of time being a barrier to engagement, the barrier was instead that research was not being prioritised (Lowrie et al. 2015). However, the case study research findings also add more depth to understanding why prioritisation of clinical services prevents pharmacists engaging with research as it was apparent that clinical services were prioritised both at a departmental strategic level and day-to-day level. Not only was managers not prioritising research identified as a barrier but research was not perceived to be a core part of pharmacists' roles was also identified. Arguably these barriers are linked to the lack of awareness of some of the organisational and professional drivers for pharmacists to undertake research i.e. if individuals

and managers are not aware of the requirements for pharmacists to undertake research under NHS Agenda for Change, and if they are not aware of the RPS requirements for research to be part of pharmacists' professional practice, research will not be seen to be a core duty.

In terms of how the research findings relating to personal barriers compare to the literature, the case study research findings are consistent with the literature. Lack of confidence reported in the case study research had previously been identified to be a barrier to engagement (Armour et al. 2007, Awaisu et al. 2015, Lowrie et al. 2015), and fear associated with research identified as a factor contributing to pharmacists lacking confidence had also been previously cited (Lowrie et al. 2015). Likewise, lack of competence identified as a barrier in both the case study research and survey had also been reported previously (Awaisu, Alsalimy 2015), as had inadequate knowledge (Lowrie et al. 2015, Abubakar et al. 2018, Crilly et al. 2017, Fakeye et al. 2017, Sarwar et al. 2018). However, a new finding of this research was a perception that newly-qualified pharmacists lacked the necessary skills and knowledge to undertake research. Couple this with the findings of Lowrie et al. (2015) who reported that postgraduate qualifications did not equip pharmacists to undertake subsequent research in the workplace, it is clear that training in research knowledge and skills is lacking in the profession. Lack of understanding and awareness of research had not been identified previously as a barrier in its own right, although some of the factors identified in the case study research as contributing to this preventing engagement had. For example, lack of awareness of opportunities (Sarwar et al. 2018, Peterson et al. 2009, Sultana et al. 2016), lack of extrinsic rewards (Lowrie et al. 2015) and lack of incentives (Sarwar et al. 2018) previously identified in the literature align to the case study research finding that insufficient personal benefits prevented engagement. Other factors, however, had not. For example, a fundamental lack of understanding among members of the profession about what research is, was identified as a barrier to engagement in both the case study research and the survey which had not been previously reported. Confusion over those activities which constituted research involvement was another barrier identified in the case

study research not found in the literature. This included confusion between the different types of scientific inquiry, confusion between research and authorship of publications and/or conference posters and abstracts, and confusion between the role of chief investigator and principal investigator. None of these findings had been cited previously in the literature although Lowrie et al (2015) reported that some participants experienced difficulty in distinguishing between different forms of investigation but did not report this as a barrier (Lowrie et al. 2015). Variation evident in the literature regarding how involvement in research is defined was also identified through the literature review for the main research study as outlined in section 6.2.2.1. It is perhaps no surprise, therefore, that there is confusion among members of the profession regarding both what constitutes research and ways in which pharmacists can be involved in research through the course of their practice. To address this confusion, pharmacists need to be provided with clarity in terms of the activities they can be involved in which constitute research involvement and the different types of scientific inquiry which constitute research. The Royal College of Physicians (RCP) have developed a Research Engagement Toolkit (RCP 2017), now in its second edition, to provide doctors who are interested in research with comprehensive up-to-date guidance and support. Pharmacists may perhaps need a similar toolkit.

10.1.4 Enablers

Like the drivers, drawbacks and barriers to engagement, the enablers identified by the case study research fell into the same two categories i.e. personal enablers relating to the individual and external enablers relating to either the organisation or profession.

Comparison of the case study findings to the initial study findings

External enablers also fell into the same themes as external barriers i.e. resource and organisational culture.

In terms of resource, allowing pharmacists the time in their day jobs to conduct research was seen to facilitate engagement in the case study research and in the initial study. Protected time and obtaining funding to backfill posts were identified in both studies as ways to allow pharmacists to undertake research. As in the initial study, time and funding therefore appeared to be closely linked, with funding appearing to facilitate pharmacists having the time to undertake research. However, the case study research offered further insight regarding how pharmacists were allowed time to undertake research as the backfilling of posts was not the only way mentioned. Reference was made to several other ways to achieve this, presumably because participants in the case study research were more research experienced and were working in research active environments. In the case study research, integrating research into pharmacists' job roles was cited as an enabler. Consultant pharmacist posts and combined clinical academic posts were cited as examples of where research was incorporated into the job roles of pharmacists. Research being a pharmacist's primary role was also cited as allowing pharmacists the time to conduct research but appeared to relate to funding facilitating time to undertake research as pharmacists in such positions were funded through programme grants. Reference was also made to having protected time to undertake research by some of those who had undertaken research as part of a postgraduate qualification. Although not apparent from the interviews, I would suggest this may be because the department had invested money in individuals to fund their qualification and were therefore willing to allow them time to conduct their research during the working day. Having a senior position was also identified in the case study research to enable individuals to find time to undertake research in the working day. This appeared to be due to those in senior positions having more autonomy in their time management compared to those in junior roles. Demographic data collected from participants in the case study research also suggested an association between seniority and research activity as the majority of participants in the pharmacists group (78.6%) had been qualified for 10 years or more and were therefore more likely to be in more senior roles (Table 10). In

addition, in relation to a lack of time being a barrier to engagement, this appeared to present a barrier more so to those in junior positions as those in more senior roles appeared less able to personally prioritise research. Individuals in junior positions not having sufficient autonomy over their time management to incorporate research into their working day perhaps implies that research was not prioritised, and again supports the idea that lack of prioritisation rather than lack of time is a barrier to engagement.

In relation to obtaining funding being an enabler to engagement, it was interesting to note that in the case study research this was cited as an enabler but difficulty backfilling posts from grant funding was also identified as a drawback. Reference was made to both the short timeframes associated with grant funding and with the funding from some grants only being sufficient to cover a proportion of an individual's salary as reasons why departments had difficulty backfilling posts from grants. However, as difficulty backfilling posts was identified as a drawback rather than a barrier to engagement suggests it is a difficulty departments are able to overcome.

Consistent with the initial study findings, access to research expertise was identified as enabling research engagement in the case study research. Access to individuals with research expertise in the department was referred to in both studies in the context of individuals with research expertise providing peer support and mentorship to others undertaking research, and also helping others with aspects of the research process. It was interesting to note that the aspects of the research process where access to research expertise in the department could help i.e. writing grant applications, developing research ideas and writing conference abstracts and publications identified in the case study research were similar to the aspects that had been identified as preventing barriers to engagement. This suggests that pharmacists having access to individuals with research expertise within their department enables them to overcome barriers associated with their lack of research knowledge and skills.

Some of the suggestions made by participants in the initial study to enable pharmacists to undertake research were also apparent in the case study research. For example, in the initial study, a suggestion was made to identify a pharmacist in the department whose role was to provide leadership in research, and at all four case study sites a pharmacist had been identified whose role encompassed leading research. Another suggestion in the initial study to facilitate engagement was closer collaborations with universities. This was apparent in the case study research as all four departments had established links with Schools of Pharmacy at local universities. However, the establishment of centralised research support facilities and collaborations with other Trusts which had been suggested as ways to facilitate research activity in the initial study, were neither apparent in the case study research nor were suggested by participants in this phase of the research. This may have been because, by virtue of all of the Trusts selected to be case study sites having research active pharmacy departments, meant that all participants in the case study research had access to individuals with research expertise within their departments which meant they did not identify a need to access such support through external collaborations. In addition, as referred to above, a pharmacist was employed at all four case study sites with responsibility to lead research and who provided individuals with access to research expertise. Where departments at case study sites had academic practice units, these too provided individuals with access to research expertise through staff who were part of the academic practice unit having research expertise. Consequently, I would suggest participants in the case study research did not perceive there to be a need for any additional support for them to undertake research over and above that which was already on offer in their departments.

New themes to emerge from the case study research relating to access to support referenced to the way departmental links with academia supported research as, through such links, individuals in practice had access to IT infrastructure and access to physical space to undertake research away from distractions. The fact that academic links were cited as facilitating access to

undisturbed physical space for staff, may give further credence to the idea that lack of prioritisation at departmental level presents a barrier to engagement, in that, for some participants in the case study research, it seemed that within the departmental environment their clinical work was perceived by others to take priority, even when their research time was funded by academia.

Organisational culture was also cited as an enabler to research engagement in the case study research as it had been in the initial study. However, like the enablers relating to resource, the case study research offered more insight as to how the culture of the organisation enabled research activity. In the case study research, the need to have a chief pharmacist who was supportive of research, as well as the need to have supportive management, were identified. For the culture of a department to enable research activity, the case study findings suggested that support for research needed to be apparent through the management team and not limited to the chief pharmacist.

In terms of personal enablers, the idea that individuals needed to have certain personal attributes or qualities to undertake research, as identified in the case study research, reaffirmed the finding of the initial study that individuals with certain mindsets were more likely to undertake research. However, none of the attributes needed that were identified in the case study research were the same as those in the initial study. Being 'free-thinking' and less risk-averse were identified in the initial study as necessary whereas in the case study research the need to be resilient, self-motivated and having a questioning mindset were found. There were some similarities though. For example, having a questioning mindset arguably aligned to the finding of the initial study which suggested that pharmacists who were 'free-thinking' were more inclined to undertake research. Likewise, although the need to be resilient and self-motivated were not identified in the initial study, the perceived complexity of research was identified as a barrier in the initial study. Reference was also made in the initial study by some of the chief pharmacists who had research-active pharmacists employed in their

respective departments, that pharmacists being research active in their department was a consequence of them as chief pharmacists responding to the personal desire of such individuals to undertake research rather than because they had encouraged them to undertake research. This suggests that although resilience and self-motivation were not made explicit as personal attributes by participants in the initial study, they were perhaps apparent. However, the key difference between the personal attributes identified in the case study research and the initial study was that those identified in the case study research were either observations or were described by participants as their personal experience, whereas in the initial study chief pharmacists thought these to be the personality traits of pharmacists who would be more inclined to undertake research. I would therefore suggest this was why the findings of the case study research differed to those of the initial study.

Individuals being competent to undertake research was also identified as an enabler in the case study research, as it had been in the initial study. Undertaking postgraduate qualifications was cited in both studies to represent a way that pharmacists could acquire these skills and, giving credence to this, was the finding that the vast majority (92.8%) of those who participated in the case study research in the pharmacists group had either Masters or Doctoral level postgraduate qualifications (Table 10). As had been found in the initial study, postgraduate qualifications were suggested as a way for pharmacists not only to gain research skills but also as a means of having access to mentorship and to have protected time to undertake research. However, other methods of accessing training were also identified in the case study research which had not been identified in the initial study with delivery of 'in-house' training being one suggestion and integration of research into postgraduate training being another. Indeed, at one case study site, training in 'softer' research skills was already in place in that training in how to get research published was delivered in-house to pharmacy staff by the lead pharmacist for research.

Comparison of the survey findings to the case study findings

The survey findings aligned with those of the case study research in that the factors most commonly perceived to enable research activity in the survey research were the integration of research into pharmacists' roles, having more pharmacy-specific funding opportunities and pharmacists having access to individuals with research expertise (Figure 13). Therefore, the key themes identified in the case study research which related to resource enabling research activity were similarly identified in the survey component. Better access to research training was also identified as a factor perceived to enable research activity from the survey which had also been a finding of the case study research.

Chief pharmacists also identified access to training and support as a measure they would put in place to increase activity (Figure 15). Interestingly, more said that they would offer staff in-house training in research skills and establish, or further develop, links with academia than said they would support more staff to undertake postgraduate qualifications, or employ a pharmacist whose role it was to lead research. The measures that they more commonly identified were those which were less resource intensive, which may reflect the current climate of cost saving being a priority in the NHS. Arguably these survey findings were different to those of the case study research as all of the pharmacy departments at the case study sites had a lead pharmacist for research. In addition, as referred to in the previous section, most of those who participated in the case study research in the pharmacists group had postgraduate qualifications. These findings suggest that having a lead pharmacist for research within a pharmacy department and postgraduate qualifications are factors which enable research activity. However, in the case study research, reference made to the support provided through academic links was mainly in respect of these links offering individuals access to infrastructure and physical space away from the Trust to undertake research free from distractions, and in-house training in research skills was only offered at one of the sites.

A question was also included in the survey relating to chief pharmacists' perceptions of the competence of newly-qualified pharmacists to undertake research. The majority of respondents (76.2%) felt that they lacked the knowledge and skills to undertake research which suggests that the undergraduate curriculum does not equip pharmacists to undertake research. Although this was not directly cited in the case study research, it could be argued it was inherently apparent as there was a perception that pharmacists lacked the competence to undertake research, and if the undergraduate curriculum did deliver adequate training in research skills then this would not have been identified. As previously highlighted, the majority of those interviewed in the case study research also held a postgraduate research qualification and perceived such qualifications to be how they personally gained their research skills, rather than them making reference to gaining such skills at undergraduate level. Taken together these findings suggest that the undergraduate degree does not equip pharmacists to undertake research. Those in the survey research who felt newly-qualified pharmacists to lack research knowledge and skills were asked a follow up question regarding how they felt additional training should be delivered. There was a strong desire for such training to be incorporated into pharmacists' postgraduate clinical training (Table 24) and was in preference to pharmacists undertaking postgraduate research qualifications or accessing training in-house.

Comparison of the research findings to the literature

Similarity was evident between the research findings and the literature. Protected time to undertake research had been identified previously as a facilitator (Crilly et al. 2017, Lowrie et al. 2015), as had access to training (Crilly et al. 2017) and the necessity of management support (Crilly et al. 2017, Lowrie et al. 2015). Particularly pertinent is the similarity to the findings of Lowrie et al. (2015) who cited access to support, job roles which oversee research activity, funding to allow backfill of roles, peer support, and access to individuals with research expertise as facilitators to engagement, all of which were apparent in the case study research. Lowrie et al. also explored pharmacists' involvement in research and reported that the majority

of participants who had either previously undertaken or were undertaking research, had done so in part fulfilment of a work-based postgraduate qualification, and that those with a postgraduate qualification were more likely to be involved in research, along with those with increasing numbers of years of postgraduate experience. The case study research also aligns to these findings in that the vast majority (93%) of participants in the case study research had undertaken research as part of postgraduate qualification, and the majority (79%) of those who participated in the case study research had been qualified as a pharmacist for ten or more years (Table 10). Lowrie et al. also concluded that the findings of their research suggested that *'perceived contextual barriers were outweighing personal elements to participate in research'* (p.10). I would suggest that the case study finding that individuals need to be resilient to undertake research gives this credibility.

New themes to emerge as enablers were the idea that an individual needs to have certain personal attributes or qualities to undertake research, the need for a pharmacy department to have a culture for research and for chief pharmacists to be supportive of research. None of these themes had been previously reported.

10.1.5 Similarity of the research findings to literature relating to other healthcare professions

The RCP paper 'Research for all: Building a research-active medical workforce', referred to earlier in chapter 2 cited barriers and drivers to research engagement among the medical profession based on the findings of a survey undertaken in 2015 (RCP 2016). The largest barriers to engagement were reported to be time and funding followed by a perception that the ethics approval system was excessively onerous. These findings were not dissimilar to those reported by pharmacists in this research. In terms of drivers, research adding variety to roles and individuals finding research rewarding were reported to be most appealing. However, when analysed by career stage, the authors reported these findings to apply more so to consultants than trainees. Gaining a competitive edge in terms of employment was more

important for trainees. Not only are the findings reported in the paper similar to the findings of this research, the reference made to research being linked to employability for doctors perhaps also gives credence to the perception from the case study research that research is more integrated into the career path of doctors compared to pharmacists. However, the finding that time was one of the largest barriers to doctors undertaking research does not give credence to the perception that pharmacists had of doctors having protected research time.

Rather than focusing on doctors, two other reports which spanned multiple health professions were identified in the literature.

The first is the report commissioned by Cancer Research UK entitled 'Every patient a research patient?' (Brown et al. 2015). Two areas of focus were particularly pertinent to this study: the barriers to research in the NHS and the steps needed to be taken to promote a stronger culture of research in the NHS. The authors of the report provided a definition of how the term 'research' had been applied in their study in recognition of the scope of possible research activities and ambiguities in interpretation of the term. For their study, the term research was applied specifically to the conduct of clinical research within the NHS which included observational studies and interventional clinical trials. Although the definition of research used was relatively narrow in focus compared to the one used in this research, it was interesting to note that several of their findings resonated with those of this study. For example, the capacity of the NHS to give people time to commit to research was described as the most frequently mentioned challenge to research engagement. The authors also reported consensus among participants that all providers, regardless of their size, would have difficulty prioritising research given their clinical commitments and the pressures on their services. They also reported service requirements to encroach on the research time of even those in clinical academic posts. Barriers to engagement identified in the report were therefore apparent in the case study research findings. Additionally, some of the drivers or motivators for undertaking research identified in the report also resonated with the findings of the case study research. For

example, a strong research culture being good for the reputation of the organisation and thereby attracting high calibre staff was cited in the report and aligns with the case study research findings relating to professional kudos being a driver for research engagement among pharmacists. Having the opportunity to do something different from routine clinical work, and making a contribution to delivering better care, were also identified as powerful motivators to engage with research which again aligned with some of the personal drivers identified in the case study research. The authors also reported that many of the interviewees talked about a need to instil a culture of research in the pre-registration training of doctors, nurses and AHPs and again this aligns with the suggestion in the case study research that integrating research into professional practice of early career pharmacists would drive engagement. However, it does not support the perception among case study participants that incorporating research into the early career training of medics led them to want to undertake research as by including medics among the professions in which a culture needed to be instilled at the pre-registration stage of their career, the report findings implied medics were one of the professions in which a culture for research needed to be developed. Some of the enablers identified in the case study research also resonated with the report findings. For example, the authors reported that *'education should be focused on the centrality of research within the day-to-day treatment and care of patients, in order to make the relationship explicit'* (p.29) was a suggestion made by interviewees. Also reported was a *'need to demonstrate to all staff that research should be seen as part of the 'day job' and not an 'add on', with the contribution of research to the care of patients and the value of the organisation as a whole being seen and understood'* (p.33). Although not identified as enablers to research engagement in the case study research, lack of awareness of the benefit of research to practice was identified as a barrier, as was research not being perceived to be a core part of pharmacists' roles, thus suggesting that raising awareness of these would have the potential to increase engagement among the profession.

The second report identified was the research commissioned by The Healthcare Improvement Studies Institute (THIS Institute) (Dimova et al. 2018) which comprised a review of the evidence base on NHS involvement in research. However, because the aim of the review was to inform the institute's strategy for engaging staff, it focused on staff engagement in helping inform or shape study design, driving research implementation and informing research priority-setting processes. It therefore had a much broader focus in terms of how involvement with research was defined than this study. Nevertheless many of the findings of the review relating to what motivates staff to be involved with research, how staff involvement with research can be enabled and rewarded, and the challenges that need to be addressed resonate with the findings of this research. For example, personal interest in a topic, belief in the importance of research, a positive previous experience of research, and prospects for career development as well as reputational or financial benefit were identified in the report as reasons why NHS staff engage with research which broadly align to the drivers for research engagement identified in this study. Interestingly, cultural expectations in some medical disciplines that research is part of the job was also reported, as was doctors being more likely to be exposed to research training earlier in their career and be involved in research-related activities through clinical audits and quality improvement projects and evaluations. This resonates with the findings of my research in that there appeared to be a perception that research was more embedded into the training of doctors than the training of pharmacists. Professional development opportunities, recognition and kudos within professional communities and organisations, seeing the impact on practice and financial rewards were also cited and, although referred to as rewards rather than drivers for engagement, broadly align with some of the personal drivers identified in this study. Enablers to research involvement included the need for guidance for staff regarding how to develop and implement research, organisational practice which allows staff time and headspace to engage with research, user-friendly platforms for engaging staff, and mechanisms for raising awareness of involvement opportunities, most of which were similar to the findings

of the case study research. Access to training for staff to develop research skills, mentoring, integration of research within clinical practice through the promotion of evidence-based practice, and collaborations with research-active organisations were also identified as research enablers and were again broadly similar to the case study research findings. Likewise, organisational leadership that values and supports research, recognition and reward for involvement in research (including career progression), and a culture of feedback and information-sharing about the impact of research on health service improvement were also identified and were again broadly similar to the case study findings. Challenges to engagement identified in the report were also broadly similar to the barriers identified from the case study research in that the challenges reported to be frequently mentioned included lack of time, lack of funding, lack of knowledge, skills and confidence, difficulty in accessing relevant training or mentorship support, and lack of support by leadership.

10.1.6 Summary

In summary, the findings of the case study research relating to the drivers, drawbacks, barriers and enablers to engagement resonate widely with the previous literature and largely reaffirm the findings of the initial study. Differences between the findings of the case study research, and both the initial study and the relevant studies identified in the literature, can largely be explained by the fact that all participants in the pharmacists group had personally undertaken research while those in the chief pharmacists group were all chief pharmacists of research-active departments. Most of the chief pharmacists who participated in the case study research had also undertaken research in their professional careers. Participants in the case study research were therefore more research experienced than participants in the initial study and in previous published studies. Accordingly participants in the case study research had greater insight into some of the issues identified. Although the response rate to the survey was relatively low, on the whole the survey findings confirmed the findings of the case study research and, therefore, give further credence to the case study research findings.

It was interesting to note that many of the enablers to research engagement identified through this research represented factors that would overcome the barriers identified, as illustrated in Table 25 below.

Table 25: Similarity between the factors identified as barriers and those identified as enablers

Factor identified as barriers to engagement	Factor identified as enablers to engagement
Lack of time	Pharmacists being allowed time to undertake research in the working day
Lack of funding	RPS having a larger role in providing pharmacy-specific research funding
Lack of support	Access to individuals with research expertise
Departmental culture where research is deprioritised and managers are unsupportive	Departmental culture supportive of research and managers are supportive
Chief pharmacist unsupportive of research	Chief pharmacist supportive of research
Pharmacists lacking research skills	Access to training in research

Also of note was the similarity that was evident between some of the factors perceived to be drivers and some of the barriers and enablers to research engagement. For example, using evidence to inform pharmacy practice was identified as a driver to engagement. However, a lack of appreciation of the benefits of research to pharmacy practice was identified as a barrier. This suggests that by raising awareness among members of the profession of the value of research to practice would encourage more pharmacists to undertake research. Clearer career pathways for pharmacists interested in undertaking research were identified as both a driver and an enabler to engagement, as was research being an expected part of an individual's role. Similarly, having individuals in a department with research expertise was also found to both drive and enable research activity. Access to individuals with research expertise was identified as an enabler to engagement while having departmental role models was identified as a driver. To be a role model a pharmacist would need to have research experience, suggesting that they

would have research expertise and thereby allow others in the department to benefit from their support. The similarity in these findings suggests that by putting in place enablers to research activity within organisations or within the profession would also drive more pharmacists to engage with research.

The discussion which follows relates to the characteristics of research active organisations and aims to identify the factors that have led to the case study site pharmacy departments being research active.

10.2 Characteristics of research-active pharmacy departments

In this section the contextual conditions evident within the pharmacy departments at the case study sites and their perceived influence on research activity among pharmacy staff are discussed. Relevant findings from the survey research are included where they have not already been covered in the previous section of the discussion in the context of drivers, drawbacks, barriers and enablers to engagement.

10.2.1 Perceived influence on research activity of contextual domain at case study sites

As outlined previously in section 7.2, for the purpose of undertaking the case study research the contextual domain at case study sites was perceived to relate to the organisational culture, leadership of the chief pharmacist and mechanisms of support for research activity. From the case study data all four sites were the same in that they all had a culture for research within the department. This culture was made apparent by research being made visible. Having a lead pharmacist for research in the department, the department having an APU, the existence of departmental research forums, and the promotion of research opportunities among staff were all ways in which research was made visible. In addition, at all four sites there were mechanisms in place to not only support those interested in undertaking research through them being able to access expertise within the department but mechanisms were also in place to allow pharmacists time to undertake research even when it was not a formal part of their

role. Examples included backfill arrangements to allow those individuals who had obtained research funding the time to undertake research, research being undertaken as part of postgraduate qualifications and, at case study site 4, through staff being allowed time to undertake research if their research aligned to departmental business priorities. Key to developing a research culture within the department was the leadership of the chief pharmacist. At all four case study sites, the chief pharmacist was described as encouraging and supportive of research, and at case study site 4, was also credited with creating a research culture in the department and driving the departmental research agenda. Another observation was that, in terms of the approximate total number of staff employed in the pharmacy department and the approximate total number of pharmacists employed, all of the case study sites appeared to be comparatively large in size, which may have been to be expected with the case study sites all being teaching hospital Trusts (Table 9). The size of the pharmacy departments may have been significant in terms of the higher levels of research activity among pharmacists employed in these organisations. From my personal knowledge, and the knowledge of my supervisors, there tends to be greater delineation of pharmacists' roles in larger Trusts. Therefore, pharmacists tend to have more specialist roles in larger Trusts compared to smaller Trusts, and which may mean there is more opportunity and/or drive for pharmacists to undertake research in Trusts that are larger in size.

Having a research culture in the organisation at Trust level was perceived to influence research activity among pharmacists at all of the case study sites. However, a research culture at Trust-level did not appear to be as important as the leadership of the chief pharmacist as any influence research culture at Trust-level was perceived to have on research activity among pharmacists was only believed to be of an indirect nature. In addition, a culture for research at Trust-level only appeared to enable research activity by removing or making it easier for pharmacists to overcome some or all of the contextual barriers to research engagement as no reference was made at any of the sites to Trust-level support for research being available for

pharmacy-led research. Not only this, but where the Trust had links with a university without a School of Pharmacy, the pharmacy department had established links with a School of Pharmacy at a different university to that linked with the Trust thereby suggesting that Trust-level academic links did not offer support for pharmacy-led research. From the case study findings, a Trust having a research culture did not appear to be a prerequisite for pharmacists to undertake research, but having a supportive chief pharmacist was. The survey findings support this as over 95% of respondents perceived that, compared to the research culture at Trust level or the staff themselves, the leadership of the chief pharmacist was either the most significant, or second most significant, factor influencing the departmental research culture (Table 23). Similarly from the survey research the Trust culture was perceived to be less influential in terms of research activity among pharmacists than the department culture (Table 22).

However, despite there being significant commonalities between the sites, I would suggest that case study site 4 was a deviant case as a different approach was being taken to increasing research engagement among pharmacists. By integrating research into the business priorities and allowing pharmacists time within the working day to undertake research if the research aligned to these priorities then the research that was being undertaken by pharmacists within the department seemed to be used to influence practice. Linking research and practice in this way, appeared not only to help pharmacists understand the importance of research to pharmacy practice, but also to understand the value of research in improving services for patients. At case study site 4 the chief pharmacist was personally driving the research agenda within the department whereas at the other sites there appeared to be a reliance on individuals having a desire to undertake research. Therefore, at case study sites 1, 2 and 3, personal desire to conduct research appeared to be the predominant driver whereas at case study site 4 the predominant driver appeared to be research being an expectation of the employer which, I would argue, can be assumed to be a direct result of the chief pharmacist driving research activity.

10.2.2 Comparison of the research findings to the literature

The literature relating to organisational theory aligns to the case study research findings pertaining to the case study site pharmacy departments all having research cultures and why case study site 4 was a deviant case in terms of the approach being taken at this site to increase research activity among pharmacists.

Many definitions of organisational culture can be found in the literature but, at its simplest, organisational culture has been defined as *'the way we do things around here'* (p.4) (Deal, Kennedy 1982) or as the common practices, attitudes, behaviours, beliefs and values that are shared between organisational members (Schein 2010).

Schein developed a framework for conceptualising organisational culture (Schein 2010). In this framework Schein suggests that culture is evident at different levels within an organisation with the term 'level' referring to the degree to which the cultural phenomenon is visible to the observer. Schein's framework is outlined in Table 26 below.

Table 26: Cultural framework developed from Schein (2010)

Level	Description	Examples
Artefacts	Observed actions, rituals and outcomes	Physical environment; language; technology; myths and stories about the organisation
Espoused values	Beliefs and key practices spoken initially by the leader/founder and then validated by the group	Mission statements; strategies and goals; what people say in particular situations
Basic assumptions	The unspoken and unconscious beliefs and expectations shared by people	Values that guide behaviour; values shared and therefore reinforced

This framework can be used to illustrate how the pharmacy departments at all four case study sites had developed research cultures. Cultural 'artefacts' were evident at all of the case study sites and mainly related to how research was made visible in the department. Mechanisms through which research was made visible that were apparent at the case study sites included having a pharmacist employed whose role was to provide leadership for research, holding departmental research forums, promoting research opportunities and the department having an APU. Mechanisms were also in place at all four case study sites to support departmental research activity and included staff having access to research expertise within the departments and pharmacists being allowed time to conduct research. These mechanisms were also examples of artefacts' according to Schein's framework (Schein 2010). Making research visible and having mechanisms to support research in place would have served to make staff aware that research was supported and that the culture was permissive of research.

Schein's framework can also be used to illustrate why case study site 4 was a deviant case. As stated earlier, at this site research was integrated into the business priorities of the department suggesting that the outcomes of research were being used to inform practice. This implies that the departmental culture at this site was at the 'espoused values' level of Schein's framework. There is an argument that research was more deeply embedded at the site i.e. that research was a 'basic assumption' of those employed in the department, as reference was made to research being 'business as usual' and an 'expectation' of pharmacists. However, integrating research into the business priorities implies that the culture for research was not at the unconscious level Schein suggests it would be for it to be at the level of the framework referred to as 'basic assumptions'. Nevertheless the culture for research within the department at case study site 4 was at a deeper level compared to the others. Certainly at case study sites 1 and 2 reference was made to the core service taking priority and suggesting thereby that research was not valued at these sites to the same extent as it perhaps was at case study site 4.

Another possible explanation for case study site 4 being a deviant case, was that at case study sites 1, 2 and 3 the culture for research was a subculture within the department as opposed to case study site 4 where the intention appeared to be to integrate research into pharmacy practice. Subcultures have been suggested in the literature to be *'small groups within an organisation that have their own cultural characteristics'* (p.247) (King, Lawley 2016). The implication of suggesting that research was a subculture at case study sites 1, 2, 3 is that the research culture was limited at these sites to only those engaged with research whereas at case study site 4 the research culture was more widespread. Illustrating that the culture for research may be a subculture within the department at case study site 2 was the reference made by one participant to the department culture for research being 'naïve' which implied they did not perceive there to be a culture for research throughout the department. Likewise, at the same case study site another participant believed more could be done to 'develop' the culture which again suggested that they did not perceive the culture to be embedded across the whole department. Similar perceptions were apparent at case study site 3 as illustrated by one participant who described the departmental research culture as being in 'its infancy' and another perceiving research to be undertaken only by the 'minority' of pharmacists in the department. At case study site 1, research appeared only to be undertaken by those for whom research was a formal part of their role or job plan. None of those interviewed made reference to backfill arrangements allowing staff time to conduct research. Also no reference was made to any mechanisms, or indeed drive, for research to be part of all pharmacists' roles at any of case study sites 1, 2 or 3. However, at case study site 4 this was explicitly the case as illustrated by the reference made to research being 'business as usual' for the department and an 'expectation' of pharmacists employed in the department as referred to above. The research culture within the pharmacy department therefore appeared more mainstream at case study site 4 than at case study sites 1, 2 and 3.

The case study finding that the leadership of the chief pharmacist was key to developing a research culture within the department also aligns with the literature relating to organisational theory. For example, it is suggested in the literature that culture can be managed if culture is viewed as something an organisation *'has'* rather than *'is'* (Buchanan, Huczynski 2019). The *has*-view holds that the culture of an organisation can be managed whereas the *is*-view sees organisational culture as something that an organisation is, which emerges as a matter of course and is not capable of being managed. Using the theory that culture is something an organisation *has* and is something that can be managed, suggests a culture can be developed within a department using a 'top-down' approach. This aligns with the case study research finding that the leadership of the chief pharmacist is key to developing a research culture within a pharmacy department in secondary care. It is also recognised in the literature that leaders can change culture (Schein 2010). Schein (2010) lists what he describes as primary and secondary embedding mechanisms to achieve culture change which align to some of the mechanisms of support and drivers for research engagement identified through the case study research and evident at case study site 4. For example, included in the primary embedding mechanisms suggested by Schein is 'how leaders allocate resource' and in the secondary embedding mechanisms is 'organisational design and structure'. These align to the case study research findings that allowing individuals time to undertake research and having internal support for research enable research activity among pharmacists. It is also suggested in the literature that leaders *'create the conditions for culture formation'* (p. 257) (Schein 2010) which implies that leaders can not only manage cultures but can also create them. Due to the hierarchical management structure existent within pharmacy departments in secondary care it can be assumed that chief pharmacists who assume the role of both a leader and manager in a pharmacy department would be able to foster a culture of research within their respective departments.

Interestingly, similarities are also evident between the case study findings pertaining to the contextual domain of research-active pharmacy departments and published literature relating specifically to research engagement and NHS staff i.e. the same two reports referred to earlier in the discussion in section 10.1.5.

The report commissioned by Cancer Research UK (Brown et al. 2015) cited an association between leadership and culture which aligns with the case study research finding that the leadership of the chief pharmacist was key to a pharmacy department having a research culture. Also cited in the report was a finding that 'strong leadership at senior levels of the health system and a commitment to research by individuals at a local level' was critical to fostering a strong research culture. Similarity is again evident with the case study research findings as the chief pharmacists' commitment to research was clearly evident at all four case study sites. The role of local leadership supported by actions to make infrastructure and processes more supportive was also described in the report as key to developing a research culture. Again the case study research findings resonate with this as not only was the leadership of the chief pharmacist found to be key to developing a departmental culture for research but, by each department having in place mechanisms through which pharmacists could access internal support and have time to conduct research, the infrastructure and processes referred to in the report were also evident at each case study site. Interestingly, it was also suggested in the same report that leadership at all levels within the research community to be 'critical' to driving the research agenda in NHS organisations. This finding also aligns with the findings of the case study research as the leadership of the chief pharmacist was described by participants in this phase of the research as driving research activity within their respective departments. Not only this, the lead pharmacist for research was also cited as either driving or encouraging engagement at all case study sites suggesting that leadership for research was evident at the case study sites at more than just the level of the chief pharmacist.

Likewise, the finding that all pharmacy departments in the case study research had a culture for research also resonated with the findings of the report in relation to how strong research cultures had been fostered within NHS organisations i.e. board performance reports and other communications demonstrating research activity and success, ensuring support was in place from R&D, recruitment of people who were pro-research, and having strong leadership. Since the report was at Trust level, not all of these mechanisms for fostering a positive research culture were identified in the case study research as this was at departmental level. However, several of these mechanisms were apparent at some or all of the case study sites. Certainly departmental research activity was promoted internally at one of the case study sites (site 4). In addition, all of the case study sites had a pharmacist whose role encompassed leadership for research and, being research experienced themselves, were able to provide others with access to research expertise as well as signpost individuals to other available support within either the wider organisation or in academia through the departmental links with local Schools of Pharmacy. As these leadership roles were described as being supportive and encouraging of research at all of the case study sites, it would also be reasonable to assume the individuals in these roles were also 'pro-research'. Therefore, many of the factors identified in the Cancer Research UK commissioned report relating to how strong research cultures had been fostered were apparent in the case study research findings.

Similarly the case study research findings also reflected the findings of the report commissioned by the THIS Institute (Dimova et al. 2018) in which the authors reported that a combination of organisational factors were identified as supporting an enabling environment. They reported these organisational factors to include: leadership that champions research motivating staff to contribute to research activities; the need to support individuals through training, mentorship and feedback; and having organisational policies and procedures which made research feasible and valued. In the case study research, the chief pharmacists and lead pharmacists for research at the case study sites were perceived to be supportive of research,

which suggests they would champion research, departments all employed individuals with research expertise who could advise and mentor staff wanting to undertake research, and, by them all having mechanisms in place to allow staff time to undertake research, had organisational policies and procedures which made research feasible. At case study site 4, I would also suggest the department had policies and procedures in place to make research feel valued by integrating research into the business priorities and in so doing use evidence from research to inform practice.

10.2.3 Summary

The pharmacy departments in the case study research exhibited what were fundamental similarities in relation to the contextual domain which was perceived to influence research activity. Firstly, they all had a departmental culture for research which was made explicit through there being a lead pharmacist for research as a minimum. At some sites the culture was also made apparent through the promotion of research opportunities and research being undertaken in the department, the existence of departmental research forums, and the department having an APU. Making research activity visible in some or all of these ways appeared to mean that staff employed in the department felt 'allowed' to undertake research. Secondly, staff had access to support to undertake research through access to individuals with research expertise i.e. the lead pharmacist for research and other research-active staff employed in the department. Individuals with research expertise either provided those interested in undertaking research with support themselves or they signposted those interested in research to other support available either within the Trust or in universities via the departmental academic links. Pharmacists at the case study sites were also supported to undertake research through mechanisms being in place to allow them time to undertake research whether that be through grant funding being used to backfill their roles or research being a formal part of their role or job plan, or because research was integrated into the departmental priorities. Lastly, at all four case study sites the chief pharmacist was supportive

of research and their leadership was key to the department being research active. They all appeared to value research and had put in place support for research activity.

In the final section of this chapter, the key findings of the research are summarised together with recommendations to increase research engagement among pharmacists employed in the hospital sector in the UK.

10.3 Key findings and recommendations to engage more hospital pharmacists with research

The recommendations presented below in Table 27 are based on the findings of all three elements to this research i.e. the initial study undertaken in part 1 of the DPharm programme, and the case study research and survey research undertaken for the main research study in part 2.

Table 27: Recommendations to increase hospital pharmacists' engagement with research

Recommendations	Research findings on which recommendations are based
Raise awareness among the profession of research being core NHS business and a professional expectation	There is a reliance on individuals having a personal desire to undertake research despite there being profession-wide drivers for pharmacists to undertake research and a requirement for research to be undertaken in the NHS (NHS England 2019a, Department of Health 2006, Act of parliament 2012, RPS 2013, RPS 2014a)
Integrate research into the early careers of pharmacists to enable individuals to gain the necessary knowledge and skills to undertake research and instil in them a desire to undertake further research in their careers	Newly-qualified pharmacists perceived to lack knowledge and skills to undertake research; research experience found to enable individuals to gain the knowledge and skills to undertake research as well as instilling in individuals a desire to undertake further research
Raise awareness of funding opportunities available to pharmacists	Funding allows individuals the time to undertake research but there is a lack of awareness of funding opportunities available to pharmacists
Raise awareness of benefits of research to improved patient outcomes	Pharmacists lack awareness of the value of research in terms of improved patient outcomes (Davies 2016, Boaz et al. 2015, Downing et al. 2017)
Establish a career structure with clear progression for those interested in pursuing a career which combines research and practice	Lack of perceived personal benefits to undertaking research within the hospital sector
Educate pharmacists regarding the ways in which they can be involved in research by providing clarity regarding the types of activities research involvement encompasses and clarity regarding the different types of research and different types of scientific inquiry pharmacists can be involved in or undertake	Pharmacists lack an understanding of what constitutes research and there is potential for confusion between authorship of publications and research, between activities classed as supporting research delivery and those classed as research involvement, and between the different types of scientific inquiry

In response to the last recommendation relating to the need to educate pharmacists in terms of the ways they can be involved in research and the types of scientific inquiry they can undertake, I have developed a 'paradigm' aimed specifically at pharmacists which aims to clarify how members of the profession can engage with research. See Figure 16 below.

The aim of the paradigm is to make it clear to pharmacists that the level of academic rigour required to undertake academic research per se is not necessarily required to undertake other forms of scientific inquiry. The idea is that the paradigm allows pharmacists to see they can take a stepwise approach to conducting research by starting with a type of inquiry where less rigour is needed and then moving upwards towards the more academic-style research. Similarly the paradigm makes it clear that pharmacists can be involved in research at different levels, with leading studies being the most involved. An example of how a pharmacist might collaborate in a study could be by their involvement in a research project as a member of a multi-disciplinary team, whereas an example of how a pharmacist might contribute to a study could be where a pharmacist acts in the capacity of a principal investigator for a multi-centre study.

The intention would be for the paradigm to be used as an educational tool for research-naïve pharmacists interested in undertaking research to help them identify the types of scientific inquiry they can be involved in and the ways in which they can be involved. For pharmacists who have already begun their research journey, the purpose of the paradigm would be to help them identify other ways they could be involved in research or other types of scientific inquiry in which they could be involved. By not making reference to practice research in the paradigm, the intention is that pharmacists do not feel limited to undertaking research only into the practice of pharmacy. Instead the paradigm aligns with the definition of pharmacy research suggested by Koshman and Blais (2011) referred to in chapter 2 who suggested pharmacy research not to be restricted to practice research, and is commensurate with the definition of pharmacists' involvement in research used throughout this research.

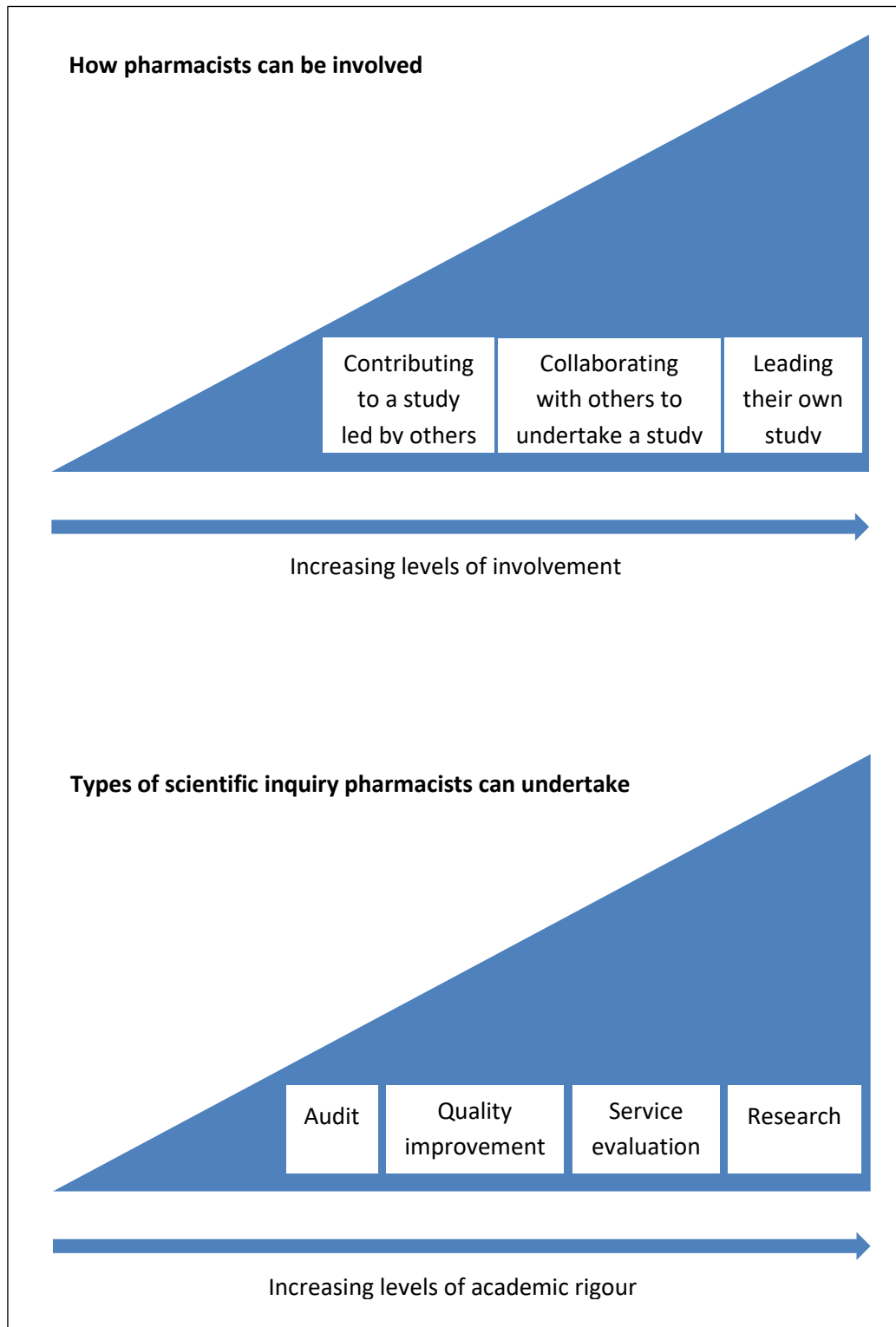


Figure 16: Paradigm illustrating the ways pharmacists can undertake research

11 Reflexivity

Reflexivity is recognition of the influence a researcher brings to the research process (Kuper et al. 2008). In this chapter I discuss how my professional background and experience as a researcher may have influenced this research.

Foremost, it is my professional background that has been influential in leading me to conduct research in this area. Having spent the majority of my career to date working as a hospital pharmacist and in my current role with the NIHR, I have become passionate about pharmacists undertaking research. In turn this led me to want to conduct research to explore how to engage more pharmacists employed in the hospital sector in the UK with research. I chose not to extend the research to encompass pharmacists working in primary care because of the inherent cultural differences between the sectors and, it was only in July 2015, that NHS England launched a pilot scheme to significantly increase the number of pharmacists working in GP practices by subsidising them to employ pharmacists in patient-facing roles (Pharmaceutical Journal, 2015). Therefore I did not extend the research to include community pharmacists or pharmacists working in GP practices.

I recognise that to a certain extent I was an 'insider' to the research due to my professional background (Dwyer, Buckle 2009). As outlined in chapter 2, I am a pharmacist by profession and the majority of my career to date has been spent working as a hospital pharmacist in acute secondary care teaching hospital NHS Trusts. In terms of the case study research, I have considerable experience of working in what can be assumed to be similar environments to the case study participants. Although I did not undertake my own research whilst in these roles, nevertheless I was involved with research through my involvement with delivery of clinical trials. Also, as outlined in chapter 2, this research was undertaken as part of a Professional Doctorate in Pharmacy and during which I continued to practice as a pharmacist in my role as Lead Pharmacist for NIHR Clinical Research Network West Midlands. In terms of how this may have

influenced the research, in my role with the NIHR I interact on a regular basis with both healthcare professionals undertaking research from across multiple disciplines, as well as staff involved in research management and governance employed both in Trusts and by the network itself. Through this role I am not only aware of the importance of research to the NHS, but have also gained insight into some of the barriers preventing staff employed in the NHS from engaging with research. Indeed, throughout the course of undertaking the research component of the DPharm programme, I have attended meetings or events in my professional capacity as Lead Pharmacist for NIHR Clinical Research Network West Midlands where I have been party to discussions which have echoed some of the findings of this research. However, it is not only my professional background that may have influenced this research but my experience of undertaking this research may also have shaped my interpretation of the findings as, for example, I have personally experienced some of the barriers and enablers to research described by participants in the case study research.

It is important to consider how both my professional background and research experience may have influenced the research (Kuper et al. 2008). For the case study research, the questions included in the interview guide may have been influenced by my background and experience and, likewise, the themes I identified when analysing the data may also have been so influenced. Similarly, some of the findings reported in previous studies may have resonated with me more than others which may have also shaped my interpretation of the case study findings in the context of the literature. Therefore, as outlined in section 8.1.6, I took steps to minimise 'researcher bias' i.e. where the researcher may selectively collect and record data or base interpretations on personal perspectives (Roberts, Priest 2010). These steps included devising interview guides based on previous research findings and which included questions that related to the research objectives, and ensuring that probing questions were used to explore subjects from the perspectives of participants in depth (Arksey, Knight 1999). To analyse the data, the interviews were audio-recorded and transcribed verbatim and 'constant

comparison' used to ensure the themes identified were grounded in the data (Gray 2014, Smith 1998). Additionally, case study sites were selected outside of the West Midlands region where I did not have a working knowledge of current practice in relation to the phenomena being investigated. I was also not overt with participants regarding my role within the NIHR to minimise the introduction of bias in the interview data resulting from any perceived power participants may have thought I had working for an organisation that funds research in the NHS. I introduced myself to participants as a pharmacist undertaking research as part of a Professional Doctorate in Pharmacy and did not make any reference to my role in the NIHR in participant information leaflets or in any email correspondence I had with participants as I used my Keele University email address rather than my NIHR address. To also minimise any perceived power imbalances between myself and participants I believed the attire I chose for conducting the interviews was, from my personal experience of working as a hospital pharmacist, commensurate to that of a pharmacist working in such an environment in that my clothes were smart, but not too formal or casual. However, the very fact I was conducting the interviews as part of a research project may have influenced participants' responses due to the research subject being research itself. Being research-experienced themselves, participants may have been more positive about their research or equally they may have seen me as someone who may have appreciated some of the challenges they had incurred leading them to be more negative about their experience than they may have been had they thought the conversation was not being conducted as part of a research project. There is no possible way I could have prevented participants from knowing that the study was being undertaken as a research project due to the ethical requirements for conducting research in the NHS in that participants are required to be informed they are taking part in a research study, and that participants have to consent to taking part. I do not feel that conducting the interviews at participants' workplaces would have influenced their responses particularly as it was only the interviews with chief pharmacists that were conducted in the interviewee's office. Interviews

with participants in the pharmacists' participant group at each site were mostly conducted in departmental meeting rooms rather than individuals' offices. The potential influence of conducting interviews at case study sites would more so have been that it enabled more individuals to take part than had participants been asked to travel to be interviewed.

Maintaining the anonymity of participants while at the same time providing enough detail to capture the nuance in the data, was also an issue for the case study research. To maintain anonymity, particularly when analysing the data pertaining to the contextual domain at the case study sites and the influence this had on research activity, was problematic. For example, I could not overtly express the opinions of the chief pharmacist or the lead pharmacist for research at case study sites as participants at the site would have been able to identify the site, and therefore identify the chief pharmacist and lead pharmacist for research. I did consider identifying the Trusts that were case study sites. However, although I believe the chief pharmacists at these Trusts may have talked openly about their leadership and the support in place for pharmacists to undertake research at departmental level had I identified the sites, I do not believe they would have talked openly about the culture for research within their Trusts. Similarly, I do not believe pharmacists in the pharmacists' participant groups at case study sites would have talked openly had their Trust been identified.

Reflexivity is referred to in the literature as being an important consideration for qualitative research (Kuper et al. 2008), which is why this chapter has focused on the case study research. However, I would also argue that my professional background and experience may also have influenced the survey research, albeit to a lesser extent, as chief pharmacists in the West Midlands who were aware of my role may have responded. To minimise researcher effects in relation to the survey, participants were informed that their responses would be anonymised meaning that the responses they gave were unlikely to have been influenced by my role to any significant degree.

In terms of my epistemological position and how this may have influenced my findings, as outlined earlier in chapter 7 I believe my worldview aligns to that of pragmatism. Pragmatism, as a research paradigm, is based on the proposition that researchers should use all the philosophical and/or methodological approaches that works best for the particular research problem being investigated (Tashakkori, Teddlie 1998). Therefore, I believe my worldview influenced my approach to undertaking the research as it allowed me to combine the use of both qualitative and quantitative approaches to address the research question.

12 Limitations and future work

Despite efforts to ensure the research findings were both valid and reliable, as outlined in sections 8.1.6 and 9.1.5 in relation to the case study research and survey research respectively, limitations to the research still remain. These limitations, and ideas for future work, are outlined in this chapter.

In terms of the validity of the case study research findings, as outlined in section 8.2, it was unclear if data saturation was achieved at one of the case study sites due to the small number of pharmacists who volunteered at the site. However, I believe data saturation was more than likely achieved across the data set in its entirety as no additional themes were found to emerge during the data analysis. The case study research findings may also have been skewed due to participants being susceptible to social desirability effect making them more likely to provide responses which they perceived to be socially acceptable (Bryman 2012). However, this effect was potentially minimised by informing participants that their individual responses would be anonymised, and the Trusts selected to be case study sites would not be identified in reporting of the data. To minimise response bias, case study sites were also purposefully selected to be outside of the West Midlands where I was less likely to be known in my professional capacity.

The transferability of the findings may also be limited as all the Trusts selected to be case study sites were all the same type of NHS Trust i.e. acute secondary care teaching hospital NHS Trusts based in England which could limit the transferability of the findings to other types of NHS Trusts and the devolved nations. Additionally, as all participants in the case study research were either research-active themselves, or the chief pharmacist of a research-active pharmacy department, the research may not reflect the attitudes and opinions of non-research active pharmacists and/or pharmacists working in non-research active departments. However, although the response rate to the survey was low, the survey findings generally confirmed the case study findings and, as the survey was not limited to chief pharmacists of acute secondary

care teaching hospital NHS Trusts but was instead conducted with chief pharmacists of all acute secondary care NHS Trusts the case study results can arguably be applied to all secondary care NHS Trusts.

Regarding the survey findings, as a self-administered questionnaire was used as the survey instrument, there was no mechanism for independently verifying the validity of the data gathered. It was also not possible to prevent an individual completing the questionnaire more than once as responses were not linked to email addresses. Likewise, it was not possible to prevent individuals completing the survey who were not chief pharmacists. Also in relation to the validity of the findings, as with the case study participants, survey respondents may also have been vulnerable to the social desirability effect, particularly if they were already aware of research being an expected part of professional practice for pharmacists and also an expectation of NHS employees. There was also a possibility of self-selection bias in that those chief pharmacists who responded to the survey may have had more positive attitudes and opinions towards research than those who did not respond (Bryman 2012). In addition, the response rate to the survey was relatively low (14.9%). It is therefore difficult to determine how representative the findings are of the population of interest i.e. chief pharmacists of acute secondary care NHS Trusts.

In terms of future work, it may be interesting to conduct semi-structured telephone interviews with a wider cohort of research active pharmacists and/or chief pharmacists of secondary care NHS Trusts to further explore the drivers, barriers and enablers to engagement with more granularity than the survey undertaken in this research allowed. It may also be interesting to extend the survey to managers of other healthcare professions in secondary care NHS Trusts. If similar findings resulted they would indicate that the issues preventing pharmacists engaging with research are shared by other health professions, suggesting it would potentially be appropriate to take a multi-professional approach to engaging NHS staff with research. It may also be interesting to extend the survey to other branches of the profession such as community

pharmacists, pharmacists employed in GP practices and pharmacists in other roles to establish if the findings of the case study research are evident in other sectors of employment.

To disseminate the research findings, I intend to feed back the findings to the Association of Teaching Hospital Pharmacists chief pharmacist network through which I distributed the scoping exercise email survey to identify potential case study sites, in addition to publishing the research in relevant academic journals. I also intend to write an article for the NHS England and NHS Improvement Chief Pharmacists' monthly newsletter where the survey was advertised as well as sharing a summary of the findings to those who participated in the case study research phase of the research. I will also use the findings to engage pharmacists in the West Midlands with research through my role with the National Institute for Health Research Clinical Research Network by raising awareness of the importance of research and opportunities for involvement with pharmacists across the region. As chief pharmacists were found to be key to engaging pharmacists employed in the hospital sector, I will also share my findings with the West Midlands Chief Pharmacists Network. In relation to the Clinical Research Network I also intend to present my research to the Senior Leadership Team of the network in the West Midlands as well as share my findings with interested parties at the national level within the network through the Clinical Research Network Coordinating Centre.

13 Conclusions

It is apparent from the research that pharmacists practising in secondary care in the UK can be research active and that the research pharmacists in this sector are undertaking is not limited to audit, service evaluation and quality improvement projects, but also encompasses research undertaken with academic rigour. However, research activity within the profession in the hospital sector in the UK seems to be the exception rather than the rule. To increase research engagement within the profession, it was clear from the case study research that more needs to be done to ensure pharmacists value research and understand the benefits of research to improving services for patients, and to achieve this pharmacists need to be made aware of how research can be used to inform practice. Relating evidence-based practice to evidence-based medicine would be one way to achieve this as the impression gained from the case study research was that pharmacists were familiar with, and used, evidence from research to inform therapeutic decisions concerning medicines and yet, paradoxically, did not apply the same principles to informing their practice. Integrating research into practice would be another way to encourage pharmacists to use evidence to inform their practice. However, this would seem to represent somewhat of a culture change as despite all case study sites being selected on the basis of them having 'high' research activity levels among pharmacists, only one department seemed to have incorporated research into their pharmacy service. In addition to pharmacists not valuing research, other drivers for engagement were lacking and included a lack of both personal reward and recognition. From talking to participants in the pharmacists group, I felt many questioned the point of engaging with research, specifically in relation to personal gain. Lack of career progression and lack of recognition of research in the career structure of pharmacists appeared to be perceived by participants in this group as representing major barriers to engagement, yet chief pharmacists felt research to be an essential requirement for pharmacists to attain very senior positions within the health service. The difference in the perspectives of these two participant groups perhaps suggests it is the transferable skills gained

through research that are valued for senior leadership positions, but that this is not being communicated to those in more junior roles. It was also clear that pharmacists employed in the hospital sector were not generally aware of research being a requirement of the NHS, nor were they aware of research being a professional expectation of pharmacists by the Royal Pharmaceutical Society. Outside of a personal desire to change practice, or a personal interest in research, it therefore seemed unclear why hospital pharmacists would incorporate research into their practice unless there was direct drive for them to do so from within the department in which they were employed.

To engage more pharmacists in research, there is a need to do more than simply instil in individuals a personal desire to undertake research. It was clear from this study that to engage with research, pharmacists also need departmental support including being allowed time to undertake research and having access to research expertise. At all of the case sites, a pharmacist was employed whose role was to lead research. Those in such roles were all personally research experienced with doctoral level research qualifications and were able therefore to offer support to others. In addition, mechanisms were in place to allow staff time to conduct research in the working day, whether through research being a formal part of their role or job plan, through backfill arrangements resulting from individuals being awarded research funding, or simply through research being an expectation of all pharmacists employed in the department. The survey results supported these findings of the case study research.

Having a departmental research culture was found to be highly influential in terms of research activity among pharmacists. Making research visible within the department was found to have an important role in developing such a departmental culture by pharmacists feeling 'allowed' to conduct research. Employing a lead pharmacist for research was also important to achieving this. The existence of such roles within the pharmacy departments in the case study research gave research a focus within the department as well as offering practical support to individuals interested in conducting research. Several individuals in these leadership roles were also

credited with driving the departmental research agenda and contributing to the development of a culture for research within the department. However, the leadership of the chief pharmacist appeared to be key to developing such a culture within a department. At all four case study sites the chief pharmacist was described as being supportive of research, and at two of the sites was described as encouraging or driving activity. Not only this, having a chief pharmacist who was supportive of research appeared to be key to ensuring that the mechanisms of support referred to above were in place. In addition, participants in the chief pharmacists group in the case study research perceived part of the role of chief pharmacists to be to encourage and support pharmacists to undertake research. The significance of the leadership of chief pharmacists in determining research activity among pharmacists was also supported by the survey.

Organisational culture and leadership appeared to have a large part to play in influencing research activity among pharmacists, certainly at departmental level. The influence of the Trust culture was less clear. Reference was made at some sites to the Trust having a culture for research making pharmacy-led research 'easier' to conduct which implied that a research culture at this level within an organisation removed some or all of the contextual barriers. However, it certainly did not appear to be a prerequisite for pharmacists to be research active. Neither was a requirement for a Trust to be part of an Academic Health Science Centre.

It was not only organisational factors that were identified as enablers to increased engagement as changes pertaining to the profession were also identified. For example, a view widely held was that newly-qualified pharmacists lacked the knowledge and skills to conduct research suggesting that either research training needs to be emphasised in the undergraduate curriculum, or it needs to be included in the early careers training of pharmacists after graduation. I would suggest the latter to be more appropriate as having research experience seemed to be a consistent theme which had inspired participants who took part in the case study research to conduct further research in their careers. Postgraduate qualifications seemed

also to be the way that most participants had gained their research skills. This would imply that if postgraduate research qualifications could be seen to hold the same key to career progression as postgraduate clinical qualifications, or if research could be incorporated more into postgraduate clinical qualifications, not only would more pharmacists be inspired to undertake research but more would have the skills to do so.

In summary, to increase engagement with research among pharmacists employed in the hospital sector, pharmacists need to be inspired to undertake research and be supported to do so. To drive engagement, pharmacists need to value research not only for altruistic reasons but because they understand the benefit of research to practice. There also needs to be clear personal reward for undertaking research such as a career path for practicing pharmacists in the hospital sector interested in research. In terms of support, pharmacists need to be allowed time to conduct research in their day job and also need to have access to individuals with research expertise. Having a departmental culture for research is therefore key to driving and supporting research among pharmacists. Achieving such a culture within a department seems to be reliant on the chief pharmacist being supportive of research. Therefore, to engage more pharmacists in the hospital sector with research, the leadership of chief pharmacists is crucial. Pharmacists also need to be exposed to research early in their career, not only to allow them to develop research knowledge and skills, but also to instil in them a desire to undertake research throughout their professional careers.

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15 Appendices

Appendix 1: Databases searched using EBSCO, ProQuest and Web of Science

Details of the EBSCO, ProQuest and Web of Science database selections and databases these included

Software package	Database option selected	Databases included in database selection
EBSCO	All pharmacy databases	AMED - The Allied and Complementary Medicine Database MEDLINE PsycINFO PsycARTICLES
ProQuest	Health and medicine databases	MEDLINE Physical Education Index PILOTS: Published International Literature on Traumatic Stress TOXLINE
Web of Science	Web of Science Core Collection (1970-present)	Science Citation Index Expanded (1970-present) Social Sciences Citation Index (1970-present) Arts & Humanities Citation Index (1975-present) Conference Proceedings Citation Index- Science (1990-present) Conference Proceedings Citation Index- Social Science & Humanities (1990-present) Book Citation Index- Science (2005-present) Book Citation Index- Social Sciences & Humanities (2005-present)

Appendix 2: Details of database searches for initial study literature review

EBSCO database search

Search number	Search term	Results
1	Pharmacist* (TI) OR Pharmacist* (SU) OR Pharmacy* (TI) OR Pharmacy (SU)	53,697
2	Attitude* (TI) OR Attitude* (SU) OR Opinion* (TI) OR Opinion* (SU) OR Perception* (TI) Perception* (SU) OR View* (TI) OR View* (SU) Perspective* (TI) Perspective* (SU) Barrier* (TI) OR Barrier* (SU) Facilitator* (TI) OR Facilitator*(SU)	1,586,618
3	Research* (TI)	310,772
4	(Pharmacist* (TI) OR Pharmacist* (SU) OR Pharmacy* (TI) OR Pharmacy (SU)) AND (Attitude* (TI) OR Attitude* (SU) OR Opinion* (TI) OR Opinion* (SU) OR Perception* (TI) Perception* (SU) OR View* (TI) OR View* (SU) Perspective* (TI) Perspective* (SU) Barrier* (TI) OR Barrier* (SU) Facilitator* (TI) OR Facilitator*(SU)) AND (Research* (TI))	91

Key: TI (title); SU (subject term)

ProQuest database search

Search number	Search term*	Results
1	Pharmacist* (TI) OR Pharmacist* (SU) OR Pharmacy* (TI) OR Pharmacy (SU)	51,143
2	Attitude* (TI) OR Attitude* (SU) OR Opinion* (TI) OR Opinion* (SU) OR Perception* (TI) Perception* (SU) OR View* (TI) OR View* (SU) Perspective* (TI) Perspective* (SU) Barrier* (TI) OR Barrier* (SU) Facilitator* (TI) OR Facilitator*(SU)	803,552
3	Research* (TI)	223,529
4	(Pharmacist* (TI) OR Pharmacist* (SU) OR Pharmacy* (TI) OR Pharmacy (SU)) AND (Attitude* (TI) OR Attitude* (SU) OR Opinion* (TI) OR Opinion* (SU) OR Perception* (TI) Perception* (SU) OR View* (TI) OR View* (SU) Perspective* (TI) Perspective* (SU) Barrier* (TI) OR Barrier* (SU) Facilitator* (TI) OR Facilitator*(SU)) AND (Research* (TI))	89

Key: TI (document title); SU (all subjects and indexing)

Appendix 2 continued

Web of Science database search

Search number	Search term	Results
1	Pharmacist* (title) OR Pharmacist* (SU) OR Pharmacy* (title) OR Pharmacy (topic)	49,906
2	Attitude* (title) OR Attitude* (topic) OR Opinion* (title) OR Opinion* (topic) OR Perception* (title) Perception* (topic) OR View* (title) OR View* (topic) Perspective* (title) Perspective* (topic) Barrier* (topic) OR Barrier* (topic) Facilitator* (title) OR Facilitator*(topic)	2,597,754
3	Research* (TI)	514,840
4	(Pharmacist* (TI) OR Pharmacist* (topic) OR Pharmacy* (TI) OR Pharmacy (topic)) AND (Attitude* (TI) OR Attitude* (topic) OR Opinion* (TI) OR Opinion* (topic) OR Perception* (TI) Perception* (topic) OR View* (TI) OR View* (topic) Perspective* (TI) Perspective* (topic) Barrier* (topic) OR Barrier* (topic) Facilitator* (TI) OR Facilitator*(topic)) AND (Research* (TI))	171

Key: TI (title)

Appendix 3: Initial study participant information sheet



Participant Information Sheet

Study title:

An exploration of Chief Pharmacists' attitudes and perceptions towards pharmacists undertaking research

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 Julie Shenton, I am in the second year of a Professional Doctorate in Pharmacy at Keele University and I am doing this research study as part of my doctorate. Please e-mail me at j.j.shenton@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?

The purpose of the study is to explore the attitudes and perceptions of Chief Pharmacists to pharmacists undertaking research and to explore Chief Pharmacists' perceptions of the barriers and facilitators to pharmacists undertaking research.

Why have I been chosen?

You are being invited to take part in this research study because you are a Chief Pharmacist of an acute or mental health Trust in the West Midlands.

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 and you can still withdraw at any time. 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 semi-structured interview with myself (Julie Shenton) where I will ask you to talk about your perceptions of why pharmacists chose, or chose not, to undertake research, how you think pharmacists can be involved in research and your opinions in relation to the benefits and drawbacks of pharmacists undertaking research. I will also ask you about pharmacists undertaking research in your department. To conduct the interview I will arrange a mutually convenient time to meet with you at your Trust and I expect the interview to last for approximately 30 minutes.

Will I be recorded, and how will the recorded media be used?

With your permission I would like to audio record our discussion. The digital recording of the discussion made during this research project will be used only for analysis. 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?

The disadvantages to taking part are that I will be asking you to give up 30 minutes of your time for the face-to-face interview. I am not aware of any possible risks to you participating.

What are the possible benefits of taking part?

I intend to share anonymised results with the group taking part, and you may therefore benefit from an insight into the views and opinions of others on the topic in your peer group within the West Midlands.

What if there is a problem or something goes wrong?

You can contact me (Julie Shenton) 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 supervisors (Professor Ray Fitzpatrick at r.fitzpatrick@keele.ac.uk or Dr Alison Gifford at a.gifford@keele.ac.uk). Alternatively, you can contact the Chair of the School of Pharmacy Research Ethics and Governance Committee (Dr Judith Rees) at j.a.rees@keele.ac.uk.

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 only be stored on password-protected media that only I and my supervisors (Professor Ray Fitzpatrick and Dr Alison Gifford) 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 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 Professional Doctorate in Pharmacy 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 School of Pharmacy 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 (Julie Shenton) at j.j.shenton@keele.ac.uk. Alternatively, you can contact me in writing at the School of Pharmacy, Keele University, Staffordshire ST5 5BG.

Appendix 4: Initial study consent form



Consent Form

Title of Project: An exploration of Chief Pharmacists' attitudes and perceptions towards pharmacists undertaking research

Name of Principal Investigator: Julie Shenton

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.
- 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
- 6 I agree to allow the data collected to be used for future research projects
- 7 I agree to be contacted about possible participation in future research projects.

Name of participant Date Signature

Researcher Date Signature

1 copy for participant, 1 copy for researcher

Appendix 5: Initial study interview guide

Interview Guide

Are pharmacists in your department undertaking research?

If so can you give me some examples of how they may be involved in research or what research they're undertaking?

Can you tell me how they're supported to undertake research?

What do you think the reasons are that pharmacists might chose to undertake research?

What do you think the reasons are that pharmacists might chose not to undertake research?

In your opinion what are the benefits to pharmacists undertaking research?

In your opinion what are the drawbacks to pharmacists undertaking research?

How do you think pharmacists can be involved in research?

Is undertaking research in job descriptions of your pharmacists?

Is undertaking research included in pharmacists' appraisals?

In principle would you be happy for me to come back you for the second part of my research to ask you for names of pharmacists in your department that I could approach to interview about their attitudes and perceptions to undertaking research?

Appendix 6: Initial study ethics approval letter



22nd February 2016

Julie Shenton
DPharm student - School of Pharmacy
Keele University

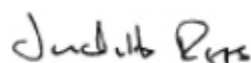
Dear Ms Shenton

Study title – An exploration of chief pharmacists' attitudes and perceptions towards pharmacists undertaking research

Thank you for submitting the above research proposal for ethical review. I am pleased to inform you that your application has been approved by the School of Pharmacy Research Ethics and Governance Committee.

This approval is subject to the following conditions. If the fieldwork goes beyond the date stated in your application, you must notify the Committee. If there are any other amendments to your study, you must submit an 'application to amend study' form. Please contact the secretary of the Committee (Dr Simon White) for a copy of the form. If you have any queries, please do not hesitate to contact me.

Yours sincerely



Dr Judith Rees

Chair – School of Pharmacy Research Ethics and Governance Committee

Copy to: Prof Ray Fitzpatrick (supervisor)
Dr Alison Gifford (supervisor)

School of Pharmacy
Hornbeam Building Room 1.24
j.a.rees@keele.ac.uk

Keele University, Staffordshire ST5 5BG, UK
www.keele.ac.uk +44 (0)1782 732000

Appendix 7: Details of database searches for factors pertaining to the contextual domain and research activity among pharmacists

EBSCO database search

Search number	Search term	Results
1	Pharmac*(TI) OR Pharmac* (SU)	3,560,893
2	Research (TI) OR Research (SU)	939,584
3	"organisational culture*" (TI) OR "organisational culture*" (SU)	282
4	(Pharmac*(TI) OR Pharmac* (SU)) AND ((Research (TI) OR Research (SU)) AND ("organisational culture*" (TI) OR "organisational culture*" (SU)))	2
5	Leader* (TI) OR Leader* (SU)	91,995
6	(Pharmac*(TI) OR Pharmac* (SU)) AND ((Research (TI) OR Research activit* (SU)) AND (Leader* (TI) OR Leader* (SU)))	135
7	"model* of support"(TI) OR "model* of support" (SU)	398
8	(Pharmac*(TI) OR Pharmac* (SU)) AND ((Research (TI) OR Research activit* (SU)) AND "model* of support"(TI) OR "model* of support" (SU))	1

Key: TI (title); SU (subject term)

Web of Science database search

Search number	Search term	Results
1	Pharmac*(TI) OR Pharmac* (topic)	865,624
2	Research (TI) OR Research (topic)	3,593,609
3	"organisational culture*" (TI) OR "organisational culture*" (topic)	1715
4	(Pharmac*(TI) OR Pharmac* (topic)) AND (Research (TI) OR Research (topic)) AND ("organisational culture*" (TI) OR "organisational culture*" (topic))	4
5	Leader* (TI) OR Leader* (topic)	105,144
6	(Pharmac*(TI) OR Pharmac* (topic)) AND (Research (TI) OR Research (topic)) AND (Leader* (TI) OR Leader* (topic))	345
7	"model* of support"(TI) OR "model* of support" (topic)	349
8	(Pharmac*(TI) OR Pharmac* (topic)) AND (Research (TI) OR Research (topic)) AND "model* of support"(TI) OR "model* of support" (topic))	2

Key: TI (title)

Appendix 8: Details of database searches for factors pertaining to the contextual domain and research in general

EBSCO database search

Search number	Search term	Results
1	Research (TI) OR Research (SU)	939,584
2	"organisational culture*" (TI) OR "organisational culture*" (SU)	282
3	((Research (TI) OR Research (SU)) AND ("organisational culture*" (TI) OR "organisational culture*" (SU)))	41
4	Leader* (TI) OR Leader* (SU)	91,995
5	(Research (TI) OR Research (SU)) AND (Leader* (TI) OR Leader* (SU))	7521
6	"model* of support"(TI) OR "model* of support" (SU)	398
7	(Research (TI) OR Research activit* (SU)) AND ("model* of support"(TI) OR "model* of support" (SU))	2


Key: TI (title); SU (subject term)

Web of Science database search

Search number	Search term	Results
1	Research (TI) OR Research (topic)	3,593,609
2	"organisational culture*" (TI) OR "organisational culture*" (topic)	1715
3	(Research (TI) OR Research (topic)) AND ("organisational culture*" (TI) OR "organisational culture*" (topic))	824
4	Leader* (TI) OR Leader* (topic)	105,144
5	(Research (TI) OR Research (topic)) AND (Leader* (TI) OR Leader* (topic))	32,292
6	"model* of support"(TI) OR "model* of support" (topic)	349
7	(Research (TI) OR Research (topic)) AND ("model* of support"(TI) OR "model* of support" (topic))	3

Key: TI (title)

Appendix 9: Email survey to identify case study sites

 Keele UNIVERSITY

Julie Shenton <j.j.shenton@keele.ac.uk>

Survey to ATHP chief pharmacists
1 message

Julie Shenton <j.j.shenton@keele.ac.uk> 28 October 2016 at 15:11
To: David.Campbell@northumbria-healthcare.nhs.uk

Dear David

Thank you again for agreeing to help with the distribution of the initial survey for my research.

As discussed yesterday, please could you send the e-mail below to the ATHP chief pharmacists on my behalf either Tuesday or Wednesday next week (Tuesday 1st November or Wednesday 2nd November).

Kind regards

Julie

Dear Chief Pharmacist

I am currently studying for a Professional Doctorate in Pharmacy (DPharm) with Keele University. As part of this I am undertaking some research to explore the attitudes and opinions of hospital pharmacists working in secondary care acute Trusts towards research. Some of you may recall that I attended the ATHP meeting in May to talk about my research.

The research I am planning to undertake will involve case studies of Trusts with research-active pharmacy departments, and to help me to select sites I would be grateful if you could provide responses to the following questions:

- 1) How many pharmacists are employed in your Trust
 - a) In terms of WTE?
 - b) In terms of headcount?

- 2) How many pharmacists are currently undertaking research (in terms of headcount)?

NB please exclude pharmacy clinical trials staff solely involved in IMP management activity to support the delivery of research

- 3) Excluding those currently undertaking research, approximately how many other pharmacists have undertaken research in the past 3 years (in terms of headcount)?

NB please exclude pharmacy clinical trials staff solely involved in IMP management activity to support the delivery of research

The next 3 questions are about the structure of your department and how this supports research activity

- 4) Does your department have an Academic Practice Unit (APC) (or equivalent)?

- 5) Is your Trust part of an Academic Health Science Centre (AHSC)?

Appendix 9 continued

6) Does your department/Trust have a structure other than the APC or AHSC models described above? If yes, please give details

A response by Friday 11th November 2016 would be very much appreciated.

If you have any queries please don't hesitate to contact me either at j.j.shenton@keele.ac.uk or on 07703 889359

Many thanks

Julie

Appendix 10: Letter confirming ethics approval not required for scoping exercise



Julie Shenton <julie.shenton@nihr.ac.uk>

Re: Fwd: Service evaluation query

1 message

Nicola Leighton <n.leighton@keele.ac.uk>
To: Julie Shenton <julie.shenton@nihr.ac.uk>

29 September 2016 at 16:15

Hi Julie

I've checked with my manager and he confirmed that the e-mail to identify case study sites is outside the need for ethical approval - this is because it is to identify potential sites to participate in the research. However, as you know you will need ethical approval for the research work itself.

Hope this helps

Regards

Nicola

Nicola Leighton

Research Governance Officer

Keele University

Directorate of Engagement & Partnerships

Academic Legal Services (Academic Contracts – IP – Research Governance) | Campaigns & Development | Local Growth | Partnership Development | Research Support Services | Science & Innovation Park

Innovation Centre 2 | Keele University Science & Innovation Park | Keele University | Staffordshire | ST5 5NH | UK | Telephone: 01782 733306 | www.keele.ac.uk

Please consider the environment before printing this email.

Appendix 11: Email invitation to chief pharmacists of potential case study sites

Dear [insert name of chief pharmacist]

I am undertaking research to explore the attitudes and opinions of hospital pharmacists towards undertaking research as part of a Professional Doctorate in Pharmacy at Keele University. You may recall that you provided responses to a short survey in November 2016 about research activity among pharmacists at your Trust and models of support for pharmacists to undertake research.

I am emailing to ask if you would be willing for your Trust to be one of four case study sites for this research.

At each case study site, I would wish to undertake semi-structured interviews with the chief pharmacist, and a cohort of pharmacists who are either currently undertaking research or have undertaken research in the previous three years. Interviews with chief pharmacists would be undertaken face-to-face, and interviews with pharmacists would be undertaken individually either face-to-face, or by telephone. I expect each interview to take between 30 and 60 minutes.

Face-to-face interviews would take place at your Trust over two days. In that time I would expect to undertake interviews with the chief pharmacist and up to seven pharmacists who are willing to participate and meet the inclusion criteria i.e. are currently undertaking research or have undertaken research in the previous three years. If more pharmacists agree to take part than can be interviewed face-to-face over two days, I would undertake further interviews by telephone.

To help you decide whether you yourself would wish to take part please find attached a participant information sheet. This gives further information about the study and outlines what taking part would involve. Please also find attached a consent form which I will need a signed copy of before you can participate.

If you agree to your Trust being a case study site, I would also ask you to forward an e-mail on my behalf to all pharmacists in your department to invite them to participate.

If you could reply to this e-mail by [insert date 2 weeks from the date of the e-mail] to confirm whether or not you agree to your Trust being a case study site, and whether or not in principle you would be happy to participate that would be very much appreciated.

If you have any questions please don't hesitate to contact me at j.j.shenton@keele.ac.uk.

Kind regards

Julie

Version 1 15/01/17

Appendix 12: Chief pharmacists participant group participant information sheet



Participant Information Sheet

Study Title

An exploration of the attitudes and opinions of hospital pharmacists towards undertaking research

Invitation

You are being invited to consider taking part in the research study 'an exploration of the attitudes and opinions of hospital pharmacists towards undertaking research'. This project is being undertaken by Julie Shenton and the research study is being undertaken as part of a Professional Doctorate in Pharmacy at Keele University. Before you decide whether or not you wish to take part, it is important for you to understand why this research is being done and what it will involve. Please take time to read this information carefully and discuss it with others if you wish. Please ask me (Julie Shenton) if there is anything that is unclear or if you would like more information. I can be contacted by e-mail at j.j.shenton@keele.ac.uk.

What is the purpose of the study?

The aims of the research are to:

1. To explore the barriers and enablers to hospital pharmacists undertaking research
2. To make recommendations to inform policy to engage more hospital pharmacists with research

Why have I been invited?

You have been invited to take part in this research study because you are a chief pharmacist of a teaching hospital and within your department there pharmacists are either currently undertaking research or have undertaken research within the previous 3 years. If you chose to participate your Trust will be one of four Trusts selected to be case study sites for the study.

Do I have to take part?

You are free to decide whether you wish to take part or not. If you do decide to take part you will be asked to complete and sign a consent form. You are free to withdraw from this study at any time up to 30 days from the date of the interview without giving reasons. To withdraw from the study please contact either myself (Julie Shenton) at j.j.shenton@keele.ac.uk or alternatively contact my supervisors, either Prof Ray Fitzpatrick at r.fitzpatrick@keele.ac.uk or Dr Alison Gifford at a.gifford@keele.ac.uk. If you chose to withdraw all data and documents containing personal information about you will be destroyed. If, after you have given your consent to take part in the study, you lose the capacity to consent during the study, you would be withdrawn from the study but any data already collected would be retained and used in the study.

What will happen to me if I take part?

If you chose to take part you will be invited to take part in a face-to-face semi-structured interview with myself (Julie Shenton) where I will ask you about your perceptions of why pharmacists chose, or not chose, to undertake research and your opinions in relation to the benefits and drawbacks to pharmacists undertaking research. I will also ask you about pharmacists undertaking research in your department, ask you about any research strategies in your organisation and ask you about what support you think pharmacists need to undertake research. To conduct the interview I will arrange a mutually convenient time to meet with you at your Trust and I expect the interview to last for approximately 30 to 60 minutes.



Will I be recorded, and how will the recorded media be used?

With your permission I would like to audio record our discussion. The digital recording of the discussion made during this research project will only be used for analysis. No other use will be made out of it without your written permission, and no one outside the research team (i.e. myself and my supervisors (Prof Ray Fitzpatrick and Dr Alison Gifford)) will be allowed access to the original recordings.

What are the risks (if any) of taking part?

I am not aware of any direct risks to you from participating in the research study. However, there is a possibility that you will be able to be identified by role but to minimise the risk all data will be anonymised, and participating Trusts will not be identified. The only disadvantage to taking part will be that I will be asking you to give approximately 30 to 60 minutes of your time to participate in a face-to-face interview.

What are the possible benefits of taking part?

There are no benefits to you personally in taking part in this study. However, I intend to use the findings of the research to engage key stakeholder groups such as the Association of Teaching Hospital Pharmacists chief pharmacists network in the development of recommendations or strategies to engage more hospital pharmacists in undertaking research. By engaging more pharmacists with research, patients will ultimately benefit through pharmacists both adding to the pharmacy practice evidence base and contributing to the wider practice of evidence-based medicine in the NHS.

Who will have access to information about me?

All personal information collected about you during the course of the research will be kept strictly confidential and no one outside the research team (i.e. myself and my supervisors (Prof Ray Fitzpatrick and Dr Alison Gifford)) will be allowed access to it. Electronic data will be stored on password-protected media that only the research team will have access to. Hardcopies of data will be kept secure in a locked cupboard that only members of the research team will have access to. At the end of the study all data and documents containing personal information will be retained for 12 months before being destroyed. To maintain anonymity transcribed data will be anonymised and any identifying information will be removed. You will not be able to be identified in any reports or publications. At the end of the study anonymised data will be retained for 5 years in line with Keele University guidelines and subsequently destroyed.

I do however have to work within the confines of current legislation over such matters as privacy and confidentiality, data protection and human rights and so offers of confidentiality may sometimes be overridden by law. For example in circumstances whereby I am concerned over any actual or potential harm to yourself or others I must pass this information to the relevant authorities.

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 Professional Doctorate in Pharmacy 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, presentation or summaries.

What if there is a problem?

If you wish to complain or if you have any concerns about any aspect of this study, you can contact me (Julie Shenton) at j.j.shenton@keele.ac.uk and I will do my best to answer your questions. Alternatively, if you do not wish to contact myself you may contact my supervisors Prof Ray Fitzpatrick (r.fitzpatrick@keele.ac.uk) or Dr Alison Gifford (a.gifford@keele.ac.uk).

If you remain unhappy about the research and/or wish to raise a complaint 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 the University's contact for complaints regarding research at the following address:

Appendix 12 continued



Nicola Leighton, Research Governance Officer, Directorate of Engagement and Partnerships, IC2 Building, Keele University, ST5 5NH, e-mail address n.leighton@keele.ac.uk, telephone number 01782 733306

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 Ethical Review Panel

Contact for further information

If you have any questions or require any further information, either now or at any time during the study, please contact me (Julie Shenton) at (j.j.shenton@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

Appendix 13: Chief pharmacists participant group consent form



Consent Form

Title of Project:

An exploration of the attitudes and perceptions of hospital pharmacists towards undertaking research

Name and contact details of Principal Investigator:

Julie Shenton (j.j.shenton@keele.ac.uk)

- Please tick box*
- 1 I confirm that I have read and understand the participant information sheet dated 24/03/17 (version 3) 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 30 days from the date of the interview.

 - 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

 - 6 I agree for anonymised short quotes to be used in the final report

 - 7 I agree for anonymised short quotes to be used in any publications that result from the research

 - 8 I agree to be contacted by the researcher either by telephone or e-mail following the interview if the researcher requires clarification on anything said during the interview

 - 9 I agree to data collected during the course of the study being retained and used if I lose capacity to consent during the study

Name of participant Date Signature

Researcher Date Signature

1 copy for participant, 1 copy for researcher

Appendix 14: Email invitation to potential participants in the pharmacists' participant group

Dear [insert name of chief pharmacist]

Thank you for agreeing for your Trust to be a case study site for my research. To invite pharmacists in your organisation to participate, could I please ask you to forward the email below to all pharmacists in your organisation on my behalf? Could I also please ask that you forward the attached participant information sheet and consent form for the pharmacist participant group with the email?

Many thanks

Julie

E-mail to forward to chief pharmacists in your department:

E-mail sent on behalf of Julie Shenton

Dear pharmacist

I am undertaking research to explore the attitudes and opinions of hospital pharmacists towards undertaking research as part of a Professional Doctorate in Pharmacy at Keele University

Part of this research will use case study methodology and your Trust has been selected to be one of four case study sites.

At each case study site I would like to interview the chief pharmacist and a cohort of pharmacists who are either currently undertaking research or have undertaken research within the previous 3 years.

As your Trust has been selected as a case study site, this e-mail is an invitation to you to participate in my research study.

Participating in the study will involve you undertaking a semi-structured interview with myself, either face-to-face or by telephone, where I will ask you about your experience in undertaking research and explore your attitudes and opinions towards pharmacists undertaking research. I expect the interviews to take between 30 and 60 minutes.

Face-to-face interviews will be undertaken at your workplace over two days but, due to time constraints, I may only be able to undertake a limited number of interviews face-to-face. Therefore, if you agree to participate and I am unable to offer you a face-to-face interview, I may invite you undertake an interview by telephone.

All interviews, whether face-to-face or by telephone, will be arranged for a mutually convenient date and time.

To take part in the research you need to either be currently undertaking research or have undertaken research in the last three years. By 'undertaking research' I mean doing your own research or working as part of a team who are undertaking research. Please note that this excludes operational involvement in managing investigational medicinal products as part of clinical trials. To help you decide whether you would wish to take part please find attached a participant information sheet. This gives further information about the study and outlines what taking part would involve. Please also find attached a consent form which I will need a signed copy of before you can participate.

If you would be willing to participate in the study please e-mail me at j.j.shenton@keele.ac.uk by [insert date 2 weeks from the date of the e-mail].

In addition, could I please ask that you include in your e-mail the following information:

Version 215/01/17

Appendix 14 continued

1. Your grade i.e. the NHS agenda for change banding of your role
2. Whether you are currently undertaking research or have undertaken research in the previous 3 years

This information will help me to ensure that the participants interviewed face-to-face are representative of your Trust

If you have any questions please don't hesitate to contact me at j.j.shenton@keele.ac.uk

Kind regards

Julie

Appendix 15: Pharmacists participant group participant information sheet



Participant Information Sheet

Study Title

An exploration of the attitudes and opinions of hospital pharmacists towards undertaking research

Invitation

You are being invited to consider taking part in the research study 'an exploration of the attitudes and opinions of hospital pharmacists towards undertaking research'. This project is being undertaken by Julie Shenton and the research study is being undertaken as part of a Professional Doctorate in Pharmacy at Keele University. Before you decide whether or not you wish to take part, it is important for you to understand why this research is being done and what it will involve. Please take time to read this information carefully and discuss it with others if you wish. Please ask me (Julie Shenton) if there is anything that is unclear or if you would like more information. I can be contacted by e-mail at j.j.shenton@keele.ac.uk.

What is the purpose of the study?

The aims of the research are to:

1. To explore the barriers and enablers to hospital pharmacists undertaking research
2. To make recommendations to inform policy to engage more hospital pharmacists with research

Why have I been invited?

You have been invited to take part in this research study because your chief pharmacist agreed for your Trust to be a case study site for my research. At each case study site I will be inviting the chief pharmacist to participate and a small cohort of pharmacists who are either currently undertaking research or have undertaken research in the previous 3 years. Your Trust is one of four Trusts which are case study sites for the research. The number of pharmacists participating at each site will depend on how many pharmacists within the department are, or have, undertaken research and agree to be interviewed.

Do I have to take part?

You are free to decide whether you wish to take part or not. If you do decide to take part you will be asked to complete and sign a consent form. You are free to withdraw from this study at any time up to 30 days from the date of the interview without giving reasons. To withdraw from the study please contact either myself (Julie Shenton) at j.j.shenton@keele.ac.uk or alternatively contact my supervisors, either Prof Ray Fitzpatrick at r.fitzpatrick@keele.ac.uk or Dr Alison Gifford at a.gifford@keele.ac.uk. If you chose to withdraw all data and documents containing personally identifiable information about you will be destroyed. If, after you have given your consent to take part in the study, you lose the capacity to consent during the study, you would be withdrawn from the study but any data already collected would be retained and used in the study.

What will happen to me if I take part?

If you chose to take part you will be invited to take part in a semi-structured interview with myself (Julie Shenton), either face-to-face or by telephone, where I will ask you about research that you are, or have previously, undertaken and your experiences of undertaking research. I will also ask you about your perceptions of why pharmacists chose, or not chose, to undertake research and your opinions in relation to the benefits and drawbacks to pharmacists undertaking research. I will also ask you what support you think pharmacists need to undertake research and how you think more pharmacists can be encouraged to undertake research. In addition, I will ask you about the reasons that you chose to undertake research and what have been the benefits and drawbacks of undertaking research in your experience. To conduct the interview I will arrange either a mutually convenient time to meet with you at your Trust for a face-to-face interview, or a mutually convenient time for a call for a telephone interview. I expect the interview to last for approximately 30 to 60 minutes.

Version 3 24/03/17
IRAS number 220173



Will I be recorded, and how will the recorded media be used?

With your permission I would like to audio record our discussion. The digital recording of the discussion made during this research project will only be used for analysis. No other use will be made out of it without your written permission, and no one outside the research team (i.e. myself and my supervisors (Prof Ray Fitzpatrick and Dr Alison Gifford)) will be allowed access to the original recordings.

What are the risks (if any) of taking part?

I am not aware of any direct risks to you from participating in the research study. However, there is a possibility that you will be able to be identified by role but to minimise the risk all data will be anonymised, participants' specific job titles will not be referred to and participating Trusts will not be identified. The only disadvantage to taking part will be that I will be asking you to give approximately 30 to 60 minutes of your time to participate in a face-to-face or telephone interview.

What are the possible benefits of taking part?

There are no direct benefits to you personally in taking part in this study. However, I intend to use the findings of the research to engage key stakeholder groups such as the Association of Teaching Hospital Pharmacists chief pharmacists network in the development of recommendations or strategies to engage more hospital pharmacists in undertaking research. By engaging more pharmacists with research, patients will ultimately benefit through pharmacists both adding to the pharmacy practice evidence base and contributing to the wider practice of evidence-based medicine in the NHS.

Who will have access to information about me?

All personal information collected about you during the course of the research will be kept strictly confidential and no one outside the research team (i.e. myself and my supervisors (Prof Ray Fitzpatrick and Dr Alison Gifford)) will be allowed access to it. Electronic data will be stored on password-protected media that only the research team will have access to. Hardcopies of data will be kept secure in a locked cupboard that only members of the research team will have access to. At the end of the study all data and documents containing personal information will be retained for 12 months before being destroyed. To maintain anonymity transcribed data will be anonymised and any identifying information will be removed. You will not be able to be identified in any reports or publications. At the end of the study anonymised data will be retained for 5 years in line with Keele University guidelines and subsequently destroyed.

I do however have to work within the confines of current legislation over such matters as privacy and confidentiality, data protection and human rights and so offers of confidentiality may sometimes be overridden by law. For example in circumstances whereby I am concerned over any actual or potential harm to yourself or others I must pass this information to the relevant authorities.

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 Professional Doctorate in Pharmacy 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, presentation or summaries.

Who is organising and funding the research?

The study is being organised and funded by the School of Pharmacy at Keele University.

What if there is a problem?

If you wish to complain or if you have any concerns about any aspect of this study, you can contact me (Julie Shenton) at j.j.shenton@keele.ac.uk and I will do my best to answer your questions. Alternatively, if you do not wish to contact myself you may contact my supervisors Prof Ray Fitzpatrick (r.fitzpatrick@keele.ac.uk) or Dr Alison Gifford (a.gifford@keele.ac.uk). If you remain

Version 3 24/03/17
IRAS number 220173

Appendix 15 continued



unhappy about the research and/or wish to raise a complaint 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 the University's contact for complaints regarding research at the following address:
Nicola Leighton, Research Governance Officer, Directorate of Engagement and Partnerships, IC2 Building, Keele University, ST5 5NH, e-mail address n.leighton@keele.ac.uk, telephone number 01782 733306

Contact for further information

If you have any questions or require any further information, either now or at any time during the study, please contact me (Julie Shenton) at (j.j.shenton@keele.ac.uk). Alternatively, you can contact me in writing at the School of Pharmacy, Keele University, Staffordshire ST5 5BG.

Who has reviewed the study?

The research study has been approved by Keele University Ethical Review Panel

Thank you for taking time to read this information

Appendix 16: Pharmacists participant group consent form



Consent Form

Title of Project:

An exploration of the attitudes and perceptions of hospital pharmacists towards undertaking research

Name and contact details of Principal Investigator:

Julie Shenton (j.j.shenton@keele.ac.uk)

Please tick box

- | | | |
|---|--|--------------------------|
| 1 | I confirm that I have read and understand the participant information sheet dated 24/03/17 (version 3) for the above study and have had the opportunity to ask questions. | <input type="checkbox"/> |
| 2 | I understand that my participation is voluntary and that I am free to withdraw at any time up to 30 days from the date of the interview. | <input type="checkbox"/> |
| 3 | I agree to take part in this study. | <input type="checkbox"/> |
| 4 | I understand that data collected about me during this study will be anonymised before it is submitted for publication. | <input type="checkbox"/> |
| 5 | I agree to the interview being audio recorded and I agree for anonymised short quotes from it to be used | <input type="checkbox"/> |
| 6 | I agree for anonymised short quotes to be used in the final report | <input type="checkbox"/> |
| 7 | I agree for anonymised short quotes to be used in any publications that result from the research | <input type="checkbox"/> |
| 8 | I agree to be contacted by the researcher either by telephone or e-mail following the interview if the researcher requires clarification on anything said during the interview | <input type="checkbox"/> |
| 9 | I agree to data collected during the course of the study being retained and used if I lose capacity to consent during the study | <input type="checkbox"/> |

Name of participant Date Signature

Researcher Date Signature

1 copy for participant, 1 copy for researcher

Version 3 24/03/17
IRAS number 220173

Appendix 17: Chief pharmacists participant group interview guide

Interview guide: chief pharmacists

1. Just before we start the interview, could you confirm that you're happy for the interview to be audio recorded?

Firstly, I'd like to ask you about your Trust and the pharmacy department

2. Would you tell me a little bit about your Trust and the pharmacy department in terms of, for example, the size and how it's structured?
3. Leading on from that question, you said that you had xx pharmacists in your department, how many of those are undertaking research?
4. Can you tell me a little about the types of research these pharmacists are involved in?
5. For the pharmacists that are involved in research at the moment, is undertaking research a formal part of their roles?
Probe: ask about research being included in pharmacists' job descriptions and appraisals
6. And, is undertaking research included in job descriptions and appraisals of pharmacists not currently involved in research?
7. You have a number of research-active pharmacists in your department, is this as a result of a formal departmental research strategy or other departmental strategies where participation in research is formalised?
8. And does your Trust have a formal research strategy?

I'd like to move now to talking about support for pharmacists to undertake research

9. How do you support pharmacists in your department to undertake research?
10. Does your department have links with universities or any other research active organisations?
Probe: ask about formal and informal links and which universities
11. How do these links with academia support pharmacists to undertake research?
12. In your view what do you think pharmacists need in terms of support to undertake research?

I'd next like to ask you about your views in relation to pharmacists undertaking research.

13. What do you think motivates pharmacists to become involved in research?
Probing question: ask if responses relate to the profession as a whole, or just to their Trust
14. And what do you think might discourage them?
Probe: ask if responses relate to the profession as a whole, or just to their Trust
15. In your opinion what are the benefits of pharmacists from undertaking research?
Probe: ask about benefits for individuals/departments/Trusts/profession/patients
16. In your opinion what are the drawbacks to pharmacists undertaking research?
Probe: ask about benefits for individuals/departments/Trusts/profession/patients

So, we've talked about your department and your views in relation to pharmacists undertaking research. I'd now like to ask you a few questions about yourself and your role as a chief pharmacist

17. How have you been involved in research in your career?
18. Could you tell me a little about the types of research you're been involved in?
19. How do you as a chief pharmacist try to encourage pharmacists in your department to undertake research?

Appendix 17 continued

20. In what way do you think the leadership of the chief pharmacist can influence research activity within a department?

Thank you. We're reaching the end of the questions I wanted to ask.

21. Is there anything else I haven't asked about that you'd like to talk about in relation to pharmacists undertaking research?

Thank you very much for your time today.

Appendix 18: Pharmacists participant group interview guide

Interview guide: pharmacists

1. Just before we start the interview, could you confirm that you're happy for the interview to be audio recorded?

Firstly, I'd like to ask you some questions about your career and your experiences of undertaking research

2. How long have you been a qualified pharmacist?
3. Would you just give me a brief overview of your career to date?
4. How long have you worked at this Trust?
5. Can you tell me a little about research you have undertaken while working here?
6. And, can you tell me what research you have undertaken earlier in your career?
7. How did you become involved in undertaking research?
8. What have been the benefits to you personally of undertaking research?
9. And what have been the benefits to the department? And the Trust?
10. What drawbacks, if any, have you identified for you individually from being involved in undertaking research?
11. And have there been the drawbacks for the department? And the Trust?
12. What support have you had to undertake research?

Probe: ask about support at their current Trust and in previous roles at other organisations

Thinking more broadly about pharmacists as a profession now, rather than yourself as an individual

13. What do you think might encourage pharmacists to become involved in undertaking research?
14. And what do you think might discourage them from undertaking research?
15. In your opinion what are the benefits of pharmacists undertaking research?
Probe: ask about benefits for individuals/departments/Trusts/profession/patients
16. In your opinion what are the drawbacks to pharmacists undertaking research?
Probe: ask about benefits for individuals/departments/Trusts/profession/patients
17. In your opinion what could be done to encourage more pharmacists to undertake research?

And some final questions about your Trust and your pharmacy department

18. Is undertaking research in your job description?
19. Does your manager include undertaking research your appraisals?
20. Do you know if your department has a formal research strategy?
21. Do you know if your Trust has a research strategy?

Thank you. We're reaching the end of the questions I wanted to ask.

22. Is there anything else I haven't asked that you'd like to talk about in relation to pharmacists undertaking research?

Thank you very much for your time today.

Appendix 19: Amended chief pharmacists participant group interview guide

Interview guide: chief pharmacists

1. Just before we start the interview, could you confirm that you're happy for the interview to be audio recorded?

Firstly, I'd like to ask you about your Trust and the pharmacy department

2. Would you tell me a little bit about your Trust and the pharmacy department in terms of, for example, the size and how it's structured?
3. Leading on from that question, you said that you had xx pharmacists in your department, how many of those are undertaking research?
4. What sort of research are these pharmacists involved in?
5. How do you formalise the research activity within the department?
Probe: ask if there is a formal departmental research strategy or other departmental strategies where participation in research is formalised?
6. And does your Trust have a formal research strategy?
Probe: does that strategy specifically reference pharmacy?
7. For the pharmacists that are involved in research at the moment, how does undertaking research fit into their departmental role?
Probe: ask if it's a formal part of their role
Probe: ask about research being included in pharmacists' job descriptions and appraisals
8. And, is undertaking research included in job descriptions and appraisals of pharmacists not currently involved in research?
9. How would you describe the culture of the organisation in terms of research?
10. How would you describe the culture of the department in terms of research?

I'd like to move now to talking about support for pharmacists to undertake research

11. How do you support pharmacists in your department to undertake research?
12. What links does your department have with universities or any other research active organisations?
Probe: ask about formal and informal links and which universities
13. How do these links with academia support pharmacists to undertake research?
14. In your view what do you think pharmacists need in terms of support to undertake research?
15. The reason I chose this Trust to be a case study site was because [insert reference to model of support]. Could you describe that to me?
16. How do you think [insert model of support] influences pharmacists undertaking research?

I'd next like to ask you about your views in relation to pharmacists undertaking research.

17. What do you think motivates pharmacists to become involved in research?
Probing question: ask if responses relate to the profession as a whole, or just to their Trust
18. And what do you think might discourage them?
Probe: ask if responses relate to the profession as a whole, or just to their Trust
19. In your opinion what are the benefits of pharmacists undertaking research?
Probe: ask about benefits for individuals/departments/Trusts/profession/patients

Appendix 19 continued

20. In your opinion what are the drawbacks to pharmacists undertaking research?

Probe: ask about benefits for individuals/departments/Trusts/profession/patients

21. In your opinion what do you think the challenges are to be overcome for pharmacists to undertake research?

So, we've talked about your department and your views in relation to pharmacists undertaking research. I'd now like to ask you a few questions about yourself and your role as a chief pharmacist

22. How have you been involved in research in your career?

23. If yes, could you tell me a little about what types of research you've been involved in?

24. Do you think chief pharmacists should encourage pharmacists to undertake research?

25. How do you as a chief pharmacist try to encourage pharmacists in your department to undertake research?

26. In what way do you think the leadership of the chief pharmacist can influence research activity within a department?

Thank you. We're reaching the end of the questions I wanted to ask.

27. Is there anything else I haven't asked about that you'd like to talk about in relation to pharmacists undertaking research?

Thank you very much for your time today.

Appendix 20: Amended pharmacists participant group interview guide

Interview guide: pharmacists

1. Just before we start the interview, could you confirm that you're happy for the interview to be audio recorded?

Firstly, I'd like to ask you some questions about your career and your experiences of undertaking research

2. How long have you been a qualified pharmacist?
3. Would you just give me a brief overview of your career to date?
4. How long have you worked at this Trust?
5. Can you tell me a little about research you have undertaken while working here?
6. And, can you tell me what research you have undertaken earlier in your career?
7. How did you become involved in undertaking research?
8. What have been the benefits to you personally of undertaking research?
9. And what have been the benefits to the department? And the Trust?
10. What drawbacks, if any, have you identified for you individually from being involved in undertaking research?
11. And have there been the drawbacks for the department? And the Trust?
12. What support have you had to undertake research?

Probe: ask about support at their current Trust and in previous roles at other organisations

Thinking more broadly about pharmacists as a profession now, rather than yourself as an individual

13. What do you think might encourage pharmacists to become involved in undertaking research?
14. And what do you think might discourage them from undertaking research?
15. In your opinion what are the benefits of pharmacists undertaking research?
Probe: ask about benefits for individuals/departments/Trusts/profession/patients
16. In your opinion what are the drawbacks to pharmacists undertaking research?
Probe: ask about benefits for individuals/departments/Trusts/profession/patients
17. In your opinion what do you think the challenges are to be overcome for pharmacists to undertake research?

And some final questions about your Trust and your pharmacy department

18. Is undertaking research in your job description?
19. Does your manager include undertaking research your appraisals?
20. Do you know if your department has a formal research strategy?
21. Do you know if your Trust has a research strategy?
22. The reason I chose this Trust to be a case study site was because [insert reference to model of support]. Could you describe that to me?
23. How do you think [insert model of support] influences pharmacists undertaking research?
24. How would you describe the culture of the organisation in terms of research?
25. How would you describe the culture of the department in terms of research?

Thank you. We're reaching the end of the questions I wanted to ask.

26. Is there anything else I haven't asked that you'd like to talk about in relation to pharmacists undertaking research?

Thank you very much for your time today.

An exploration of the attitudes and opinions of hospital pharmacists towards undertaking research
Version 3 28/1/18
IRAS number 220173

Appendix 21: Original ethics approval letter for case study research



Ref: ERP2313

9th February 2017

Julie Shenton
School of Pharmacy
Keele University

Dear Julie,

Re: An exploration of the attitudes and perceptions of hospital pharmacists towards undertaking research

Thank you for submitting your revised application for review. The Proposal was reviewed at the Ethical Review Panel meeting on Thursday 26th January 2017 and the Panel commend you for your excellent response to the Panel's comments and the care and attention taken to improve the proposal. 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	Version	Date
Email to Chief Pharmacists	1	15-01-2017
Email to Pharmacists	2	15-01-2017
Participant Information Sheet – Chief Pharmacists	2	15-01-2017
Participant Information Sheet – Pharmacists	2	15-01-2017
Consent Form – Chief Pharmacists	2	15-01-2017
Consent Form – Pharmacists	2	15-01-2017
Interview Guide – Chief Pharmacists	2	15-01-2017
Interview Guide – Pharmacists	2	15-01-2017

If the fieldwork goes beyond the date stated in your application, **31st December 2017**, 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 **ERP2** in the subject line of the e-mail. This form is available via <http://www.keele.ac.uk/researchsupport/researchethics/>

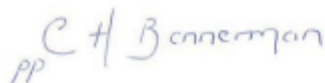
Directorate of Engagement & Partnerships
T: +44(0)1782 734467

Keele University, Staffordshire ST5 5BG, UK
www.keele.ac.uk +44 (0)1782 732000

Appendix 21 continued

If you have any queries, please do not hesitate to contact me via the ERP administrator on research.governance@keele.ac.uk stating **ERP2** in the subject line of the e-mail.

Yours sincerely,

Handwritten signature in blue ink that reads "C. H. Bennerman". To the left of the signature, the letters "PP" are written in a smaller, lighter hand.

Dr Colin Rigby
Chair – Ethical Review Panel

CC Supervisor
RI Manager

Appendix 22: Amended ethics approval letter for case study research



Ref: ERP2313

21st April 2017

Julie Shenton
School of Pharmacy
Keele University

Dear Julie,

Re: An exploration of the attitudes and perceptions of hospital pharmacists towards undertaking research

Thank you for submitting your application to amend study, informing us of various changes to the Participant Information sheets and Consent forms. I am pleased to inform you that your application has been approved by the Ethical Review Panel.

The following document have been reviewed and approved by the Panel as follows:-

Document	Version	Date
Participant Information Sheet – Pharmacists	3	24-03-2017
Participant Information Sheet – Chief Pharmacists	3	24-03-2017
Consent Form – Pharmacists	3	24-03-2017
Consent Form – Chief Pharmacists	3	24-03-2017

Just to remind you, if the fieldwork goes beyond the **31st December 2017**, 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 **ERP2** 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 **ERP2** in the subject line of the e-mail.

Yours sincerely

A handwritten signature in blue ink that reads 'C H Bonnerman' with 'PP' written below it.

Dr Colin Rigby
Chair – Ethical Review Panel

CC RI Manager
Supervisor

Directorate of Engagement & Partnerships
T: +44(0)1782 734467

Keele University, Staffordshire ST5 5BG, UK
www.keele.ac.uk +44 (0)1782 732000

Appendix 23: HRA approval letter for case study research



Skipton House
80 London Road
London SE1 6LH

Tel: 0207 104 8010
Email: hra.approval@nhs.net

Miss Julie Shenton
The Royal Wolverhampton NHS Trust
Unit 9 Greyfriars Business Park
Frank Foley Way
Stafford
ST16 2ST

15 August 2017

Dear Miss Shenton

Letter of **HRA Approval**

Study title:	An exploration of the attitudes and perceptions of hospital pharmacists towards undertaking research
IRAS project ID:	220173
Protocol number:	RG-0121-16-PHARM
REC reference:	18/HRA/0186
Sponsor	Keele University

I am pleased to confirm that **HRA Approval** has been given for the above referenced study, on the basis described in the application form, protocol, supporting documentation and any clarifications noted in this letter.

Participation of NHS Organisations in England

The sponsor should now provide a copy of this letter to all participating NHS organisations in England.

Appendix B provides important information for sponsors and participating NHS organisations in England for arranging and confirming capacity and capability. **Please read *Appendix B* carefully**, in particular the following sections:

- *Participating NHS organisations in England* – this clarifies the types of participating organisations in the study and whether or not all organisations will be undertaking the same activities
- *Confirmation of capacity and capability* - this confirms whether or not each type of participating NHS organisation in England is expected to give formal confirmation of capacity and capability. Where formal confirmation is not expected, the section also provides details on the time limit given to participating organisations to opt out of the study, or request additional time, before their participation is assumed.
- *Allocation of responsibilities and rights are agreed and documented (4.1 of HRA assessment criteria)* - this provides detail on the form of agreement to be used in the study to confirm capacity and capability, where applicable.

Further information on funding, HR processes, and compliance with HRA criteria and standards is also provided.

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It is critical that you involve both the research management function (e.g. R&D office) supporting each organisation and the local research team (where there is one) in setting up your study. Contact details and further information about working with the research management function for each organisation can be accessed from www.hra.nhs.uk/hra-approval.

Appendices

The HRA Approval letter contains the following appendices:

- A – List of documents reviewed during HRA assessment
- B – Summary of HRA assessment

After HRA Approval

The attached document "*After HRA Approval – guidance for sponsors and investigators*" gives detailed guidance on reporting expectations for studies with HRA Approval, including:

- Working with organisations hosting the research
- Registration of Research
- Notifying amendments
- Notifying the end of the study

The HRA website also provides guidance on these topics and is updated in the light of changes in reporting expectations or procedures.

Scope

HRA Approval provides an approval for research involving patients or staff in NHS organisations in England.

If your study involves NHS organisations in other countries in the UK, please contact the relevant national coordinating functions for support and advice. Further information can be found at <http://www.hra.nhs.uk/resources/applying-for-reviews/nhs-hsc-rd-review/>.

If there are participating non-NHS organisations, local agreement should be obtained in accordance with the procedures of the local participating non-NHS organisation.

User Feedback

The Health Research Authority is continually striving to provide a high quality service to all applicants and sponsors. You are invited to give your view of the service you have received and the application procedure. If you wish to make your views known please use the feedback form available on the HRA website: <http://www.hra.nhs.uk/about-the-hra/governance/quality-assurance/>.

HRA Training

We are pleased to welcome researchers and research management staff at our training days – see details at <http://www.hra.nhs.uk/hra-training/>

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Your IRAS project ID is **220173**. Please quote this on all correspondence.

Yours sincerely

Miss Helen Penistone
Assessor

Email: hra.approval@nhs.net

Copy to: *Dr Clark Crawford*
Ms Sarah Glover

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Appendix A - List of Documents

The final document set assessed and approved by HRA Approval is listed below.

<i>Document</i>	<i>Version</i>	<i>Date</i>
Evidence of Sponsor insurance or indemnity (non NHS Sponsors only) [Keele University]		19 July 2017
Interview schedules or topic guides for participants [Interview guide Chief Pharmacists]	2	15 January 2017
Interview schedules or topic guides for participants [Interview guide pharmacists]	2	15 January 2017
IRAS Application Form [IRAS_Form_24072017]		24 July 2017
Letters of invitation to participant [e-mail to chief pharmacists]	1	15 January 2017
Letters of invitation to participant [e-mail to pharmacists]	2	15 January 2017
Other [ERP Approval Letter]		09 February 2017
Other [EPR Approval Letter (Amendment 1)]		21 April 2017
Other [E-mail from ethics committee re case study site identification scoping exercise]		28 September 2016
Other [Statement of activities]	2	07 August 2017
Other [Schedule of events]	1	07 August 2017
Participant consent form [Consent form chief pharmacists]	3	24 March 2017
Participant consent form [Consent form pharmacists]	3	24 March 2017
Participant information sheet (PIS) [PIS Chief Pharmacists]	3	24 March 2017
Participant information sheet (PIS) [PIS Pharmacists]	3	24 March 2017
Referee's report or other scientific critique report [Research proposal feedback]		15 January 2017
Research protocol or project proposal [Protocol]	1	08 June 2017
Summary CV for Chief Investigator (CI) [CV Julie Shenton]	1	08 June 2017
Summary CV for supervisor (student research) [CV Ray Fitzpatrick]	1	13 June 2017
Summary CV for supervisor (student research) [CV Alison Gifford]	1	14 June 2017

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Appendix B - Summary of HRA Assessment

This appendix provides assurance to you, the sponsor and the NHS in England that the study, as reviewed for HRA Approval, is compliant with relevant standards. It also provides information and clarification, where appropriate, to participating NHS organisations in England to assist in assessing and arranging capacity and capability.

For information on how the sponsor should be working with participating NHS organisations in England, please refer to the, *participating NHS organisations, capacity and capability and Allocation of responsibilities and rights are agreed and documented (4.1 of HRA assessment criteria) sections in this appendix.*

The following person is the sponsor contact for the purpose of addressing participating organisation questions relating to the study:

Name: Miss Julie Shenton
 Tel: 07703889359
 Email: julie.shenton@nih.ac.uk

HRA assessment criteria

Section	HRA Assessment Criteria	Compliant with Standards	Comments
1.1	IRAS application completed correctly	Yes	The lead NHS R&D department named in answer to question A68 in the IRAS form are not a study site but have agreed to act as lead NHS R&D department.
2.1	Participant information/consent documents and consent process	Yes	No comments
3.1	Protocol assessment	Yes	No comments
4.1	Allocation of responsibilities and rights are agreed and documented	Yes	The Statement of Activities and Schedule of Events have been completed for information. Although formal confirmation of capacity and capability is not expected of all or some organisations participating in this study (see

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Section	HRA Assessment Criteria	Compliant with Standards	Comments
			<i>Confirmation of Capacity and Capability</i> section for full details), and such organisations would therefore be assumed to have confirmed their capacity and capability should they not respond to the contrary, we would ask that these organisations pro-actively engage with the sponsor in order to confirm at as early a date as possible. Confirmation in such cases should be by email to the CI and Sponsor confirming participation based on the relevant Statement of Activities and information within this Appendix B.
4.2	Insurance/indemnity arrangements assessed	Yes	Where applicable, independent contractors (e.g. General Practitioners) should ensure that the professional indemnity provided by their medical defence organisation covers the activities expected of them for this research study
4.3	Financial arrangements assessed	Yes	The Statement of Activities details that there will be no funding available for study sites. A cost attribution has not been provided for the activities detailed on the Schedule of Events.
5.1	Compliance with the Data Protection Act and data security issues assessed	Yes	No comments
5.2	CTIMPS – Arrangements for compliance with the Clinical Trials Regulations assessed	Not Applicable	No comments
5.3	Compliance with any applicable laws or regulations	Yes	No comments
6.1	NHS Research Ethics Committee favourable opinion	Not Applicable	This study is limited to the recruitment of NHS staff recruited by virtue of their

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Section	HRA Assessment Criteria	Compliant with Standards	Comments
	received for applicable studies		professional role.
6.2	CTIMPS – Clinical Trials Authorisation (CTA) letter received	Not Applicable	No comments
6.3	Devices – MHRA notice of no objection received	Not Applicable	No comments
6.4	Other regulatory approvals and authorisations received	Not Applicable	No comments

Participating NHS Organisations in England

<p><i>This provides detail on the types of participating NHS organisations in the study and a statement as to whether the activities at all organisations are the same or different.</i></p> <p>There will be one study site type where all site activities will take place as per the study protocol and supporting documents.</p> <p>The Chief Investigator or sponsor should share relevant study documents with participating NHS organisations in England in order to put arrangements in place to deliver the study. The documents should be sent to both the local study team, where applicable, and the office providing the research management function at the participating organisation. For NIHR CRN Portfolio studies, the Local LCRN contact should also be copied into this correspondence. For further guidance on working with participating NHS organisations please see the HRA website.</p> <p>If chief investigators, sponsors or principal investigators are asked to complete site level forms for participating NHS organisations in England which are not provided in IRAS or on the HRA website, the chief investigator, sponsor or principal investigator should notify the HRA immediately at hra.approval@nhs.net. The HRA will work with these organisations to achieve a consistent approach to information provision.</p>
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Confirmation of Capacity and Capability

<p><i>This describes whether formal confirmation of capacity and capability is expected from participating NHS organisations in England.</i></p> <p>The HRA has determined that participating NHS organisations in England are not expected to formally confirm their capacity and capability to host this research, because the study will involve minimal burden and the Chief Pharmacist at site will act as gatekeeper to the recruitment of other staff.</p> <ul style="list-style-type: none"> • The HRA has informed the relevant research management offices that you intend to undertake the research at their organisation. However, you should still support and liaise with these organisations as necessary. • Following issue of the HRA Approval letter, and subject to the two conditions below, it is

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expected that these organisations will become participating NHS organisations 35 days after issue of this Letter of HRA Approval (no later than **19th September 2017**):

- You may not include the NHS organisation if they provide justification to the sponsor and the HRA as to why the organisation cannot participate
- You may not include the NHS organisation if they request additional time to confirm, until they notify you that the considerations have been satisfactorily completed..
- You may include NHS organisations in this study in advance of the deadline above where the organisation confirms by email to the CI and sponsor that the research may proceed.
- The document "[Collaborative working between sponsors and NHS organisations in England for HRA Approval studies, where no formal confirmation of capacity and capability is expected](#)" provides further information for the sponsor and NHS organisations on working with NHS organisations in England where no formal confirmation of capacity and capability is expected, and the processes involved in adding new organisations. Further study specific details are provided the *Participating NHS Organisations and Allocation of responsibilities and rights are agreed and documented (4.1 of HRA assessment criteria)* sections of this Appendix.

Principal Investigator Suitability

This confirms whether the sponsor position on whether a PI, LC or neither should be in place is correct for each type of participating NHS organisation in England and the minimum expectations for education, training and experience that PIs should meet (where applicable).

As per the Statement of Activities there will be a local collaborator at site to facilitate practical arrangements

No training will be provided for local staff.

GCP training is not a generic training expectation, in line with the [HRA statement on training expectations](#).

HR Good Practice Resource Pack Expectations

This confirms the HR Good Practice Resource Pack expectations for the study and the pre-engagement checks that should and should not be undertaken

There will be no additional HR Good Practice expectations provided that all research activities at sites are undertaken in non-care areas.

Other Information to Aid Study Set-up

This details any other information that may be helpful to sponsors and participating NHS organisations in England to aid study set-up.

The applicant has indicated that they do not intend to apply for inclusion on the NIHR CRN Portfolio.

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Appendix 24: Questions and response formats used in the questionnaire

Survey to explore chief pharmacists' attitudes and opinions towards hospital pharmacists undertaking research

Welcome to this survey.

The purpose of the survey is to establish how widely some of the findings of case study research undertaken to explore hospital pharmacists' attitudes and opinions towards undertaking research are shared among chief pharmacists of acute secondary care NHS Trusts. The research is being undertaken as part of a Professional Doctorate in Pharmacy at Keele University.

The participation information sheet gives further information about the study and outlines what taking part involves. Please ensure that you have read the participation information sheet before you decide whether or not you wish to take part.

You are reminded that no personal data or personally identifiable information will be collected in this survey and all data will therefore be anonymous. You are free to withdraw at any point before completing the survey, but you will no longer be able to withdraw once you have submitted your responses. This is because your survey responses will not be identifiable because the data collected will be anonymous and deleting your survey responses will therefore not be possible.

If you have any questions regarding the survey or the research itself please contact the chief investigator Julie Shenton at j.j.shenton@keele.ac.uk or 07703 889359. Alternatively you may wish to contact a member of their supervisory team Prof Ray Fitzpatrick r.fitzpatrick@keele.ac.uk or Dr Alison Gifford a.j.gifford@keele.ac.uk

Thank you in advance for taking time to complete the questionnaire.

Please note that the term 'undertaking research' for the purposes of this study is defined as pharmacists carrying out their own research as opposed to managing clinical trials medicines

Appendix 24 continued

Question Number	Question	Reponses	Instructions for respondent
1	Your consent to participate	Tick box	By ticking this box you are confirming that you have read the participant information sheet and you agree to voluntarily participate in this research
2	How important do you think it is that hospital pharmacists undertake research?	Very important Important Neutral (neither important nor unimportant) Low importance Not important at all	Select one response
3	What do you think is the most significant motivator for hospital pharmacists to undertake research?	Personal desire i.e. an individual's personal desire to undertake research Professional expectation i.e. an individual believing themselves to be expected to undertake research because they are a pharmacist by profession Expectation or requirement of their role i.e. an individual believing they are expected to undertake research by their employing organisation Other (please give details)	Select one response
4	Do you think the organisational culture of your Trust influences whether pharmacists undertake research?	The organisational culture of the Trust encourages pharmacists to undertake research The organisational culture of the Trust has no influence on whether pharmacists undertake research The organisational culture of the Trust discourages pharmacists to undertake research	Select one response

Appendix 24 continued

Question Number	Question	Reponses	Instructions for respondent
5	Do you think the organisational culture of your department influences whether pharmacists undertake research?	The organisational culture of the department encourages pharmacists to undertake research The organisational culture of the department has no influence on whether pharmacists undertake research The organisational culture of the department discourages pharmacists to undertake research	Select one response
6	What do you think is most significant in terms of determining the research culture of a pharmacy department?	The research culture at Trust level The leadership of the chief pharmacist The staff themselves	Rank in order of significance with 1 being the most significant and 3 being the least significant
7	As a chief pharmacist do you feel able to support research activity in your department	Yes/No	Select one response Use skip pattern so if the respondent answers no to this question they are taken to question 8, and if they answer yes they are taken to question 9
8	Why do you feel unable to support research activity in your department? Is this because:	You lack capacity within your department to allow pharmacists to do anything other than deliver the core service You lack staff within your department with research expertise It is too difficult for pharmacists to access funding It is too difficult to backfill posts with grant funding Other (please specify)	Select all that apply

Appendix 24 continued

Question Number	Question	Reponses	Instructions for respondent
9	If you wanted to develop or increase research activity among pharmacists in your department what would you put in place?	A pharmacist whose role it was to lead research Provide staff with in house training in research skills Establish or further develop links between your department and academia Support more staff to undertake postgraduate research qualifications e.g. a Masters or a PhD/DPharm Other (please specify)	Select all that apply
10	What do you think discourages pharmacists from undertaking research?	Perceived difficulty associated with undertaking research Lack of access to individuals with research expertise Lack of perceived benefits to their career progression Lack of understanding of the benefits of research to pharmacy practice Other (please specify)	Select all that apply
11	What do you think prevents pharmacists from undertaking research?	Lack of time Lack of research knowledge and skills Lack of access to individuals with research expertise Difficulty getting funding Other (please specify)	Select all that apply
12	What do you think would enable more pharmacists to undertake research?	Them having a better understanding of what research is Having access to individuals with research expertise Integrating research into pharmacists roles More pharmacy-specific funding opportunities Having better access to research training Other (please specify)	Select all that apply

Appendix 24 continued

Question Number	Question	Reponses	Instructions for respondent
13	What do you think would encourage more pharmacists to undertake research?	Having a clear or clearer career pathway for those interested in undertaking research More promotion of research opportunities Having pharmacists with research experience in the department Having a pharmacist whose role it is to lead research Including a requirement to undertake research in pharmacists job descriptions Including research in pharmacists appraisals Other (please specify)	Select all that apply
14	Do you think newly qualified pharmacists have the knowledge and skills to undertake research?	Yes/No	Select one response Use skip pattern so if the respondent answers no to this question they are taken to question 13, and if they answer yes they are taken to question 14.
15	How do you think additional training should be delivered?	Through in-house training i.e. training delivered within the pharmacy department By incorporating research into postgraduate clinical training for pharmacists By pharmacists undertaking postgraduate research qualifications e.g. a Masters or PhD/DPharm	Rank in order of preference with 1 being most preferred option and 3 being least preferred option

Appendix 24 continued

Question Number	Question	Reponses	Instructions for respondent
16	Are you personally currently undertaking research?	Yes, as part of a postgraduate clinical qualification e.g. an MSc Yes, as part of a postgraduate research qualification e.g. a Masters or PhD/DPharm Yes, a part of a postgraduate management qualification e.g. a management diploma or an MBA Yes, but outside of a formal postgraduate qualification No	Select all that apply
17	Have you personally undertaken research previously in your career?	Yes, as part of a postgraduate clinical qualification e.g. an MSc Yes, as part of a postgraduate research qualification e.g. a Masters or PhD/DPharm Yes, a part of a postgraduate management qualification e.g. a management diploma or an MBA Yes, but outside of a formal postgraduate qualification No	Select all that apply
18	Are pharmacists in your department actively undertaking research at the time of completing this survey or have pharmacists undertaken research in the three years previous to the time of this survey?	Yes/No	Select one response

Appendix 25: Text included in NHSEI Chief Pharmacists newsletter to invite chief pharmacists to participate in the survey

Email to Director of Hospital Pharmacy NHS Improvement- Andrew Davies

Dear Andrew

Thank you for agreeing to help with the distribution of the survey for my research.

Please find below the text to include in the NHS Improvement chief pharmacists monthly newsletter to invite chief pharmacists of acute secondary care NHS Trusts to complete the questionnaire.

Kind regards

Julie

Text to include in NHS Improvement chief pharmacists monthly newsletter

Research Exploring How to Engage More Hospital Pharmacists in Research.

Julie Shenton (Lead Pharmacist and Deputy Continuous Improvement Lead NIHR Clinical Research Network West Midlands) has been undertaking research exploring the barriers and facilitators to hospital pharmacists undertaking research (as opposed to supporting clinical trials). This research has been carried out as part of a Professional Doctorate in Pharmacy at Keele University. As part of the project she has already undertaken in depth case study research at four acute Trusts where the pharmacy departments were known to be research-active. This case study research has identified a number of factors which appear to influence hospital pharmacists' involvement in research. Julie now wants to establish how widely some of the attitudes and opinions identified through the case study research are shared among a wider cohort of chief pharmacists through a short online survey. All chief pharmacists of acute secondary care trusts are invited to participate, since the case study research was conducted in acute trusts, although the results may also be applicable to mental health and community trusts.

By taking part in this survey you will be contributing to research which aims to better understand why pharmacists appear underrepresented in the research arena, as well as to enhance understanding as to how to engage more members of the profession with research.

Participating just involves completing a short online survey available via the following link: [INSERT LINK] and should take no longer than 10 and 15 minutes to complete. The results of the project will be reported in a future newsletter and hopefully in a peer reviewed journal.

A participant information sheet which gives further information about the study and outlines what taking part involves is available via the Pharmacy and Medicines Optimisation Kahootz site.

The survey will be open until [INSERT DATE FOUR WEEKS FROM THE DATE OF THE NEWSLETTER].

If you have any questions please don't hesitate to contact Julie directly at j.j.shenton@keele.ac.uk or 07703 889359. Alternatively you may contact a member of the project supervisory team Prof Ray Fitzpatrick at r.fitzpartrick@keele.ac.uk or Dr Alison Gifford a.j.gifford@keele.ac.uk.

If for any reason the link to the survey provided above does not work the survey can be accessed at the following URL: [INSERT URL].

Version 1 10/07/19

Appendix 26: Survey participant information sheet



Participant Information Sheet

Study Title

An exploration of the attitudes and opinions of hospital pharmacists towards undertaking research

Invitation

You are being invited to consider taking part in the research study 'an exploration of the attitudes and opinions of hospital pharmacists towards undertaking research'. This project is being undertaken by Julie Shenton and the research study is being undertaken as part of a Professional Doctorate in Pharmacy at Keele University. Before you decide whether or not you wish to take part, it is important for you to understand why this research is being done and what it will involve. Please take time to read this information carefully and discuss it with others if you wish. Please ask me (Julie Shenton) if there is anything that is unclear or if you would like more information. I can be contacted by e-mail at jj.shenton@keele.ac.uk.

What is the purpose of the study?

The aims of the research are to:

1. To explore the barriers and enablers to hospital pharmacists undertaking research
2. To make recommendations to inform policy to engage more hospital pharmacists with research

To undertake the research I have already undertaken case study research at four case study sites where the pharmacy departments were known to be research-active. The purpose of undertaking the survey is to establish how widely some of the attitudes and opinions of participants in the case study research are shared among a wider cohort of chief pharmacists.

Why have I been invited?

You have been invited to take part in this research study because you are a chief pharmacist of an acute secondary care NHS Trust.

Do I have to take part?

You are free to decide whether you wish to take part or not. If you do decide to participate, you may withdraw at any time before completing the survey without giving reasons. However, once you have submitted all of your responses you will no longer be able to withdraw. This is because your survey responses will not be identifiable because the data collected will be anonymous and deleting your survey responses will therefore not be possible.

What will happen to me if I take part?

If you chose to take part you will be asked to complete an online survey where you will be asked questions relating to your attitudes and opinions towards hospital pharmacists undertaking research. The online survey should take no longer than between 10 and 15 minutes to complete.

What are the risks (if any) of taking part?

I am not aware of any risks to you from participating in the research study. The only disadvantage to taking part will be that you will need to spend 10 minutes of your time completing the survey.

What are the possible benefits of taking part?

There are no benefits to you personally in taking part in this study. However, I intend to use the findings of the research to engage key stakeholder groups such as the Association of Teaching Hospital Pharmacists chief pharmacists network in the development of recommendations or strategies to engage more hospital pharmacists in undertaking research. By engaging more pharmacists with research, patients will ultimately benefit through pharmacists both adding to the

Appendix 26 continued



pharmacy practice evidence base and contributing to the wider practice of evidence-based medicine in the NHS.

Who will have access to information about me?

No personal data or personally identifiable information will be collected during the course of the research and all data collected will therefore be anonymous. At the end of the study the anonymised data will be retained for 10 years in line with Keele University guidelines and subsequently destroyed.

How will information about me be used?

The results will be included in a research report as part of my Professional Doctorate in Pharmacy 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, presentation or summaries.

What if there is a problem?

If you wish to complain or if you have any concerns about any aspect of this study, you can contact me (Julie Shenton) at j.j.shenton@keele.ac.uk and I will do my best to answer your questions. Alternatively, if you do not wish to contact myself you may contact my supervisors Prof Ray Fitzpatrick (r.fitzpatrick@keele.ac.uk) or Dr Alison Gifford (a.gifford@keele.ac.uk).

If you remain unhappy about the research and/or wish to raise a complaint about any aspect of the way that you have been approached or treated during the course of the study please write to Keele University Research Integrity Team at the following address:

Research Integrity team, David Weatherall Building, Keele University, Staffordshire, ST5 5NH, email address research.governance@keele.ac.uk

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 Faculty of Medicine and Health Science Faculty Research Ethics Committee.

Contact for further information

If you have any questions or require any further information, either now or at any time during the study, please contact me (Julie Shenton) at (j.j.shenton@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

Appendix 27: Original ethics approval letter for amendment to include the survey



Keele University FMHS Faculty Research Ethics Committee
health.ethics@keele.ac.uk

31 May 2019

Dear Julie,

Project Title:	Hospital pharmacists attitudes and opinions towards research
REC Project Reference:	MH-190028
Type of Application	Main application

Keele University's Faculty of Medicine and Health Sciences Research Ethics Committee (FMHS FREC) reviewed the above application.

Favourable Ethical opinion

The members of the Committee gave a favourable ethical opinion of the above research on the basis described in the application form, protocol and supporting documentation. Although there are no conditions attached to this opinion, it is suggested that attention to the format of the questionnaire be addressed to ensure it is the required format (i.e. include tick boxes).

Reporting requirements

The University's standard operating procedures give detailed guidance on reporting requirements for studies with a favourable opinion including:

- Notifying substantial amendments
- Notifying issues which may have an impact upon ethical opinion of the study
- Progress reports
- Notifying the end of the study

Approved documents

The documents reviewed and approved are:

Document	Version	Date
Documents submitted as part of MH-190028 submission		

Yours sincerely,

A handwritten signature in black ink that reads 'Sue Read'.

Professor Sue Read
Committee Chair

Appendix 28: Amended ethics approval letter for amendment to include the survey



Keele University FMHS Faculty Research Ethics Committee
health.ethics@keele.ac.uk

21 August 2019

Dear Julie,

Project Title:	An exploration of the attitudes and perceptions of hospital pharmacists towards undertaking research
REC Project Reference:	MH-190028
Type of Application	Amendment
Amendment Reference:	MH-190052
Amendment Date:	29 July 2019

Keele University's Faculty of Medicine and Health Sciences Research Ethics Committee (FMHS FREC) reviewed the above amendment.

Favourable Ethical opinion

The members of the Committee gave a favourable ethical opinion of the above research on the basis described in the application form, protocol and supporting documentation. There are no conditions attached to this ethical opinion.

Reporting requirements

The University's standard operating procedures give detailed guidance on reporting requirements for studies with a favourable opinion including:

- Notifying substantial amendments
- Notifying issues which may have an impact upon ethical opinion of the study
- Progress reports
- Notifying the end of the study

Approved documents

The documents reviewed and approved are:

Document	Version	Date
All documents submitted with MH-190052	-	29 July 2019

Yours sincerely,

A handwritten signature in black ink that reads 'Ed Chadwick'.

Dr Ed Chadwick
Chair

Appendix 28 continued

Appendix 29: HRA approval letter for amendment to include the survey

2/19/2020

National Institute for Health Research Mail - IRAS 220173. Amendment categorisation and implementation information



Julie Shenton <Julie.shenton@nhr.ac.uk>

IRAS 220173. Amendment categorisation and implementation information

1 message

hra.approval@nhs.net <noreply@harp.org.uk>
Reply-To: hra.approval@nhs.net
To: julie.shenton@nhr.ac.uk, research.governance@keele.ac.uk

3 Octob

Amendment Categorisation and Implementation Information

Dear Miss Shenton,

IRAS Project ID:	220173
Short Study Title:	Hospital pharmacists' attitudes and perceptions towards research
Date complete amendment submission received:	23-9-19
Amendment No./ Sponsor Ref:	NSA SEPT 2019
Amendment Date:	23 September 2019
Amendment Type:	Non-substantial
Outcome of HRA and HCRW Assessment	This email also constitutes HRA and HCRW Approval for the amendment, and you should not expect anything further
	For NHS/HSC R&D Office Information
Amendment Category	C

Thank you for submitting an amendment to your project. We have now categorised your amendment and please find this, as well as other relevant information, in it above.

What should I do next?

If you have participating NHS/HSC organisations in any other UK nations that are affected by this amendment we will forward the information to the relevant national coordinating function(s).

You should now inform participating NHS/HSC organisations of the amendment.

- For NHS organisations in England and/or Wales, this notification should include the [NHS R&D Office, LCRN](#) (where applicable) as well as the local research

When can I implement this amendment?

You may implement this amendment **immediately**. Please note that you may only implement changes described in the amendment notice.

Who should I contact if I have further questions about this amendment?

If you have any questions about this amendment please contact the relevant national coordinating centre for advice:

- England – hra.amendments@nhs.net
- Northern Ireland – research.gateway@hscni.net
- Scotland – nhsq.NRSPCC@nhs.net
- Wales – HCRW.amendments@wales.nhs.uk

Additional information on the management of amendments can be found in the [IRAS guidance](#).

User Feedback

The Health Research Authority is continually striving to provide a high quality service to all applicants and sponsors. You are invited to give your view of the service received and the application procedure. If you wish to make your views known please use the feedback form available on the HRA website: <http://www.hra.nhs.uk/hra/governance/quality-assurance/>.

Please do not hesitate to contact me if you require further information.

Kind regards

Dionne Williams
Health Research Authority
Ground Floor | Skipton House | 80 London Road | London | SE1 6LH
E: hra.amendments@nhs.net
W: www.hra.nhs.uk

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