Accurate spirometry assessment and interpretation for chronic disease management of chronic obstructive pulmonary disease in general practice: what are the barriers for practice nurses?

Professional Doctorate in Nursing

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Declarations

This thesis is being submitted in partial fulfilment of the requirements for the degree of DNurse.

This thesis is the result of my own independent work/investigation, except where otherwise stated. Other sources are acknowledged by explicit references. The views expressed are my own.

This work has not been submitted in substance for any other degree or award at this or any other university or place of learning, nor is being submitted concurrently in candidature for any other degree or award.

I hereby give consent for my thesis, if accepted, to be available for photocopying and for inter-library loan, and for the title and summary to be made available to outside organisations.

Signed ..... (candidate) Date .....

Dedications

This thesis is dedicated to my supervisors Dr Jane Harden and Dr Nichola Gale, for their endless support, patience and good humour. I also dedicate this thesis to my family and Dr Peter Edwards - without his encouragement and unwavering belief in my academic ability, the thesis would never have been started, let alone completed.

Abstract

Spirometry (lung function assessment) is an essential tool for the chronic disease management of chronic obstructive pulmonary disease (COPD). Chronic disease monitoring for COPD was introduced in 2004 and included spirometry for target achievement and financial remuneration within the Quality and Outcomes Framework of the General Medical Services Contract. However, practice nurses have anecdotally struggled to gain competence and expertise with the spirometric procedure and interpretation post 2004, despite the successful achievement of financial targets within the general practice setting. A sequential exploratory mixed methods study (Tashakkori and Teddlie, 2003) was undertaken within a University Health Board in Wales to determine what, if any, barriers exist for practice nurses undertaking spirometry assessment and interpretation for the chronic disease management of COPD. Quantitative data were collected via an online questionnaire. Qualitative interviews were conducted and analysed using an analysis framework method (Ritchie et al, 2003). The methodological framework of the feminist transformative lens (Caracelli and Greene, 1997) was utilised to gain an understanding of the barriers practice nurses faced in the gaining of competence with spirometry assessment and interpretation within the wider professional context.

The quantitative results confirmed the anecdotal reports of difficulty with spirometry and demonstrated that lack of training was the greatest reason for lack of confidence in spirometric interpretation, followed by lack of clinical time and lack of general practitioner (GP) support. The qualitative results demonstrated that practice nurses are commonly working as disenfranchised isolated practitioners within general practice teams, and are commonly undertaking a procedure in which they are not highly confident.

Recommendations for development of future clinical practice are: mandatory training with assessment of competency to improve skills with spirometry, in addition to supervisory support and training of GP colleagues. Other recommendations include: a greater focus on inter-professional team working to reduce professional isolation and disenfranchisement of practice nurses, and for practice nurses to actively contribute to local and national initiatives to improve spirometry services in the long term.

Table of Contents

		Page
Declarations		I
Dedications		II
Abstract		III
Table of Contents		IV
Tables and Figures		VIII
Prologue		X
Chapter 1 Introduction		**1**
1.1	Setting the Scene: from the Personal to the Professional	1
1.2	The Practice Problem	5
1.2.1	The Research Question	7
1.2.2	Research Aims and Objectives	9
1.2.3	Benefits and Justification	10
1.3	Context of the Research Problem	11
1.3.1	The Practice Nurse: The Historical and Policy Context	12
1.3.2	Chronic Obstructive Pulmonary Disease	19
1.3.3	Spirometry Assessment and Interpretation	23
1.4	Summary of Chapter One	25
Chapter 2 Literature Review		**27**
2.1	Introduction	27
2.2	Literature Search Strategy	27
2.3	General Practice Spirometry	30
2.3.1	COPD Diagnosis with Spirometric Assessment	31
2.3.2	The Practice Nurse and Spirometry	37
2.4	Competence and Confidence	40
2.5	Summary of Chapter Two	45

Chapter 3 Theoretical Considerations **47**

3.1 Theoretical Frameworks 47

3.2 Feminist Methodology, Epistemology and Nursing 50

3.3 Paradigms 55

3.3.1 Positivist Paradigm 56

3.3.2 Interpretivist Paradigm 58

3.3.3 The Transformative Paradigm 61

Chapter 4 Research Design **65**

4.1 Mixed Methods Design 65

4.2 The Sampling Frame 67

4.3 Ethical and Governance Considerations 68

4.4 Data Analysis 68

4.5 Quantitative Data Collection 69

4.6 Pilot Study 71

4.7 Qualitative Data Collection 74

4.8 Data Collection 76

Chapter 5 Results **81**

5.1 Introduction and Quantitative Objectives 81

5.2 Section 1: Quantitative Data 81

5.2.1 Questionnaire 81

5.2.2 Confidence in Spirometry Procedure 82

5.2.3 Confidence in Spirometry Interpretation 84

5.2.4 Guidelines/Support Used Within the Clinical Workplace 87

5.2.5 Level of Training Undertaken 89

5.2.6 Length of Service as Practice Nurse 92

5.2.7 Practice Population Size 93

5.2.8 Practice Nurses' Views on Spirometry 94

5.2.9 Summary of Findings 95

5.3 Section 2: Qualitative Data 97

5.3.1 Introduction and Qualitative Objectives 97

5.3.2 The Analysis Method Framework 97

5.3.3 Data Summary 99

i) Confidence and Competence with Spirometry 99

ii) Training Undertaken and Role in Spirometry 101

iii) Feeling Disenfranchised 103

a) Service and professional development 104
b) Professional isolation 107

iv) Power Dynamics and the Gendered Organisation 110

a) Power dynamics 111
b) Gendered organisation 112
c) Health care assistants 113

5.3.4 Summary of Results 113

Chapter 6 Discussion **118**

6.1 Quantitative Discussion 118

6.1.1 To identify (any) barriers to spirometry 118

6.1.2 To ascertain what guidance or support exists 120

6.1.3 Processes/attempts in place to address any existing barriers 121

6.1.4 Study Limitations 123

6.2 Qualitative Discussion 124

6.2.1 To identify (any) barriers to spirometry assessment 124

6.2.2 To ascertain what guidance or support exists 125

6.2.3 Processes/attempts in place to address any existing barriers 126

6.3 Theoretical Implications 127

6.3.1 Practice Nurse Identity 127

6.3.2 Education 131

6.3.3 The Practice Nurse and Spirometry 134

Chapter 7 Summary and Recommendations **139**

7.1 Summary 139

7.2 Limitations 142

7.3 Recommendations for Future Education 134

7.4 Recommendations for Future Research 145

7.5 Recommendations for Future Practice 146

References **148**

Appendix 1 Critical Analysis Grid 165

Appendix 2 Ethical and Governance Challenges 173

Appendix 3 Questionnaire 175

Appendix 4 Participant E-Mail Request 181

Appendix 5 Participant Information Sheet 183

Appendix 6 Consent Form 185

Appendix 7 Semi- Structured Interview Protocol 186

Appendix 8 Interview Schedule and Semi-Structured Interview Questions 188

Appendix 9 Worked example of Interview Analysis 190

Tables and Figures

		Page
Table 2.1	Search Methodology One	27
Table 2.2	Search Methodology Two	29
Table 5.1	Level of Confidence of Practice Nurses Undertaking the Spirometry Procedure	82
Table 5.2	Levels of Helpfulness of Guidance/Support Mechanisms for Spirometry Assessment and/or Interpretation in the Workplace	89
Table 5.3	Training and Levels of Confidence in Spirometry Assessment	91
Table 5.4	Training and Levels of Confidence in Spirometry Interpretation	91
Table 5.5	Length of Service and Levels of Confidence in Spirometry Assessment	92
Table 5.6	Length of Service and Levels of Confidence in Spirometry Interpretation	93
Table 5.7	Practice Population Size and Levels of Confidence in Spirometry Assessment	93
Table 5.8	Practice Population Size and Levels of Confidence in Spirometry Interpretation	94
Figure 1.1	The Philosophical Trinity and Philosophical Alignment	4
Figure 1.2	The Three Overlapping Concepts and Identified Themes	7
Figure 1.3	Identification of the Research Question	8
Figure 2.1	Literature Review One	28
Figure 2.2	Literature Review Two	30
Figure 4.1	Sequential Exploratory Mixed Methods Approach	66
Figure 5.1	Reasons for being Less than Highly Confident in Undertaking the Spirometry Procedure	83
Figure 5.2	What Practice Nurses Would Ideally Like to Improve Their Confidence in Undertaking the Spirometry Procedure	84
Figure 5.3	Levels of Confidence in Practice Nurses Undertaking Spirometry Interpretation	85
Figure 5.4	Reasons for Being Less than Highly Confident in Interpreting the Spirometry Trace	86

Figure 5.5	What Practice Nurses Would Ideally Like to Have in Improving Confidence in Interpreting Spirometry	87
Figure 5.6	Guidance/Support Mechanisms for Spirometry Assessment and/or Interpretation in the Workplace	88
Figure 5.7	Level of Training Undertaken by Practice Nurses	90
Figure 5.8	Practice Nurses' Views on Spirometry Assessment and Interpretation	95

Prologue

For the reader to understand my thesis, there is a need for me to introduce myself and for me to explain and contextualise my clinical background and career progression.

My name is Trudy Faulkner. I trained and worked for ten years after qualifying in a large district general hospital in the Midlands. Following the birth of my son in 1995, I did not return to my secondary care clinical nurse specialist post and instead, in an unplanned career change, moved to general practice to work as a practice nurse. I had no family locally for support and remember regarding the practice nurse post as a career break that would enable me to continue working whilst also caring for a baby. It was an unsettling time and took months to adjust to the change from working in the acute sector surgery to that of providing health promotion and screening in general practice. I struggled in adjusting to the practice nurse role, working within a team of just two nurses and felt isolated and missed the support and camaraderie from a large nursing team that I had previously taken for granted.

I don't recall any significant team working during the five years I was in post, other than having a good, albeit rather formal relationship with the five general practitioner (GP) partners. I never worked with the other practice nurse as we worked opposite shifts. There was the occasional team meeting but no practice nursing input into any initiatives or team development. Any queries were mostly directed to the other practice nurse or the practice manager. I have no recollection of introducing or influencing change at this time, other than involvement in change external to the organisation.

After two years of employment, GP fundholding was abolished and primary care groups were established in England. Primary and community health services were brought together for the first time in a single organisation controlling a unified budget for delivering health care to and improving the health of communities of about 1,000,000 people (Klein, 1999). The aim of primary care groups were to replace GP fundholding with a corporate culture that emphasised partnership and collective responsibility (Wilkin et al, 2001). New opportunities arose for practice nurse representatives for primary care group board meetings and I was fortunate to be selected as a representative for my local health board.

In 2001, my husband was offered a job relocation to South Wales and again, I left a developing career and moved to an area where I had no contacts or knowledge of the health care system. I was offered temporary work in a general practice on the outskirts of a local city which was later extended to permanent part-time hours. The practice was situated in an area of significant socio-economic deprivation, with a high patient consultation rate and high levels of chronic

disease such as diabetes and respiratory disease. Looking back, the sense of professional isolation was just as acute as on first leaving secondary care six years previously as I had once again lost my established “safety net” of practice nurse colleagues. The health care structure was different in that there were no primary care groups in Wales, I struggled to adjust to Welsh Government health policy and felt that I was having to learn a new language of health care. What did reduce my sense of isolation though was the support from the practice nursing team and GPs. I was not working in isolation and always had a designated practice nurse or on call GP to refer to. I recall this being a positive time in that so much support was given to me in the early days of employment.

I was asked to set up a respiratory service for the chronic disease management of asthma and chronic obstructive pulmonary disease (COPD). Historically, at the practice, clinics had been discontinued as patient attendance had been poor. Therefore there was little to develop as the service for both chronic diseases had to start from the beginning. I was fortunate though in that the senior partner had a keen interest in developing services, and played a key role in the development of the COPD chronic disease service in particular. It was his mentoring and teaching, also clinical support that enabled me to develop a respiratory service for the practice. The new service for COPD chronic disease management, and the challenges that were met and overcome, were critiqued in my MSc thesis (Faulkner, 2005). In 2005, I was also a finalist for the Practice Nurse of the Year award, for my contribution to COPD care in general practice.

My interest in spirometry (lung function assessment) began at this time and although spirometry was a clinical skill at which I had to work hard to gain understanding and proficiency, I cannot now imagine offering a respiratory chronic disease service without the use of a spirometer to support my decision-making in clinical practice. I would regard spirometry to be so essential and integral to care that the omission of its use would be similar to managing a diabetic service in the absence of blood glucose monitoring. I do recognise that I was fortunate in having expert mentoring and readily available resources to discuss and resolve queries, and that it was the mentoring that enabled me to develop my clinical skills to an advanced level of clinical practice.

However, I also recognise now that this was a unique situation and that the teaching and mentoring I had received had not been replicated elsewhere in the University Health Board (UHB). Feedback from practice nurse colleagues from within the UHB suggested their experiences of team working and change within the workplace were still very much like my earlier experiences in my first practice nurse post: that is, little input or contribution to change and new initiatives and poor communication within the general practice clinical team. I recognise this is subjective and it was not known whether this was reflective of a minority or

majority of practice nurses' opinions of their workplace. However, following the changes to practice nurse roles after 2004, I began to contrast my positive experiences of learning about and introducing spirometry to the respiratory service with the practice nurse feedback I was receiving. As the anecdotal stories and reports continued to be raised for several years after 2004, I decided to undertake my doctoral research to formally research practice nurses and spirometry.

Chapter One Introduction

This chapter will begin by setting the scene of the personal to the professional, contextualising COPD and spirometry assessment and interpretation within the general practice environment. The following sections will focus on the research problem, then introduce the research question. The research aims and outcomes will then be introduced, followed by a section discussing and critiquing the benefits and justification for undertaking the research. The research will then be contextualised to the role of the practice nurse followed by COPD as a disease entity. Spirometry will then be introduced to the reader, with the focus on spirometry as a tool for chronic disease management of COPD in general practice.

1.1 Setting the Scene: from the Personal to the Professional

Before discussing the professional practice issue which is the focus of this thesis, it is first necessary to locate myself as a 'researcher' by examining my own philosophical assumptions. The philosopher, Andrew Chruckry (http://www.ditext.com/archive) takes a general perspective and states that the problems of philosophy fall into three areas: (i) What exists? (ontology); (ii) How do I know? (epistemology), and; (iii) What is its value? (axiology, praxiology). I therefore needed to ask myself some fairly basic 'existential' questions which proved remarkably tricky to articulate. These were, for example, how did I 'see' the world? Was there an external reality 'out there' waiting for me to reveal it? Would this reality exist if I wasn't there to see it? Was the world socially constructed and inseparable from the human experience? I rather struggled with this as I felt there was no definitive answer and I felt that it was possible that both these things were the case. Thus my 'ontological self' was established; reality has both an objective and subjective dimension perhaps best described as 'anti-foundationalist'.

An anti foundationalist argues that all social phenomena are socially constructed and as such must be positioned in time, space and culture (Durant-Law, 2005, p. 5). Although I accept that my ontological stance on spirometry in the chronic disease management of COPD care is subjective, and has arisen from the negative feedback from practice nurses, the ontological reality is that I can never truly know the reality of the extent of the problem. Having worked within the general practice environment for twenty years however, I have an inherent knowledge of the practice nursing culture and have experienced first-hand the changes to the role of the practice nurse over the past ten years. I therefore consider that I have an insight

into the realistic picture of spirometry as a clinical skill in general practice. However, I acknowledge that there may not be a problem with practice nurses becoming competent and confident in spirometry as there is evidence that national targets for spirometry achievement are being achieved (Strong et al, 2009). I may therefore have formed my views subjectively and from a small number of practice nurses who are not representative of the practice nursing workforce.

As my epistemological stance is determined in part by my ontological position, Durant-Laws (2005, p.5) identifies the shaping epistemological question for the researcher to be:

> "Can "real" or "objective" relations between social phenomena be identified, and if so how?"

On considering the three epistemological schools: idealist, empiricist, or realist (Durant-Laws, 2005), my epistemological stance is that of the middle ground of realist. I believe my knowledge of practice nurses and spirometry is gained from my senses. It is my observations and experiences of teaching the clinical skill for over ten years that have enabled me to reflect and form realistic and logical assumptions that the problems with spirometry as a clinical skill do not solely exist in the geographical areas I have taught in, and that I believe the problem is manifest in general practice on a broader scale. I also believe my perceptions have arisen from cultural and social factors that are the unique nature of general practice nursing, therefore spirometry as a clinical skill, is not an independent phenomenon.

My perceptions are that the general practice environment can be an oppressive workplace for practice nurses, in that practice nurses can work in isolation, and training and access to education can be difficult (The Queens' Nursing Institute (QNI), 2016). I was also aware at the outset that the environment I worked in was highly gendered: in my UHB for example, there are no male practice nurses. The national gender ratio from a recent survey of 3,400 practice nurses also supports a gender imbalance of 98% female to 2% male (QNI, 2016). As a female researcher researching other females, I had to consider whether the gendered general practice workforce was actually still a reality and had any relevance in modern day general practice.

Twenty years after Davies (1995) observed that general practice was becoming increasingly attractive for nurses who wished to work and combine a career with family, the flexibility of working patterns and part-time work is still reported as a major attraction for nurses entering general practice (QNI, 2016). However, what has changed within modern general practice is the employment status and gender imbalance within medicine and general practice. Pollock (2012), surveyed 84 female and 41 male GPs, and reported that seven of the eight (87.5%) of male GPs had been offered a British Medical Association (BMA) Contract with their employer,

compared to only thirteen of the thirty-one (38.7%) female GPs. Although the survey response rate was 32% (with 40 questionnaires returned), respondent queries were raised on male GPs potentially being more valued than female GPs, and male GPs less likely to feel exploited than their female counterparts. Further, Pollock (2012) reported that only five of the forty (12.5%) of the salaried GPs received a pay rise in the previous year and the amounted protected study time for continual professional development was fell short of the study time recommended by the BMA.

Thomas (2014), reported on the shift of gender imbalance within medicine, with more female than male doctors within the National Health Service (NHS) predicted by 2017. Thomas (2014) also claims the gender imbalance has a negative effect on the NHS as most female doctors usually end up working part time in general practice, for a better work-life balance when they have young children, then retire early. The financial cost of training two female GPs to undertake the same amount of work as one full time GP described as draining to the NHS (Thomas, 2014)

My epistemological stance therefore is that the contemporary landscape of general practice critically, continues to be gendered and discriminatory to women. However, the concept of patriarchy: that is, of "male-dominated society" (Donovan, 2012: p. 79), arguably is outdated as general practice is no longer male dominated in that the ratio of male to female GPs is similar (Thomas, 2014). It is the general practice environment itself that still favours men over women however, as it attracts those who wish to predominantly work and balance careers with family commitments, by definition, the vast majority of these workers are, in fact, women (QNI, 2016: Thomas, 2014).

Questioning and exploring my ontological and epistemological views on spirometry within general practice provides the standard for the evaluation of my ontological and epistemological claims. Axiology, or value theory, covers a wide area of critical analysis and attempts to bring the discussion of values such as truth, utility, goodness, beauty, right conduct and obligation under a single heading (Hiles, 2008). Durant-Laws (2005, p.6) describes one of the two schools of axiologiocal thought as the "applied school" where knowledge as a means to inform, transform, or enable positive change is valued. Understanding more about the reality of practice nurses and general practice spirometry is, I believe, worth knowing. It can act in an emancipatory way as I believe that practice nurses are oppressed within the general practice environment. For this reason, I also believe my research should have a political aim in raising the profile of the practice nurse in chronic disease management by giving the practice nurse a voice through co-production of knowledge. The knowledge can also be applied to improve services for the chronic disease management of COPD in the future.

Durant-laws (2005), describes the philosophical trinity as the researcher's belief system in which the researcher's philosophical alignment is determined by the overlap between the researcher's ontological, epistemological and axiological position. My belief system is therefore predominantly anti-foundationalist ontology, and as I am a realist, also a combination of constructivist and idealist epistemology to achieved an applied axiology.

Figure 1.1 illustrates the philosophical trinity (Durant-Laws, 2005) and my philosophical alignment.

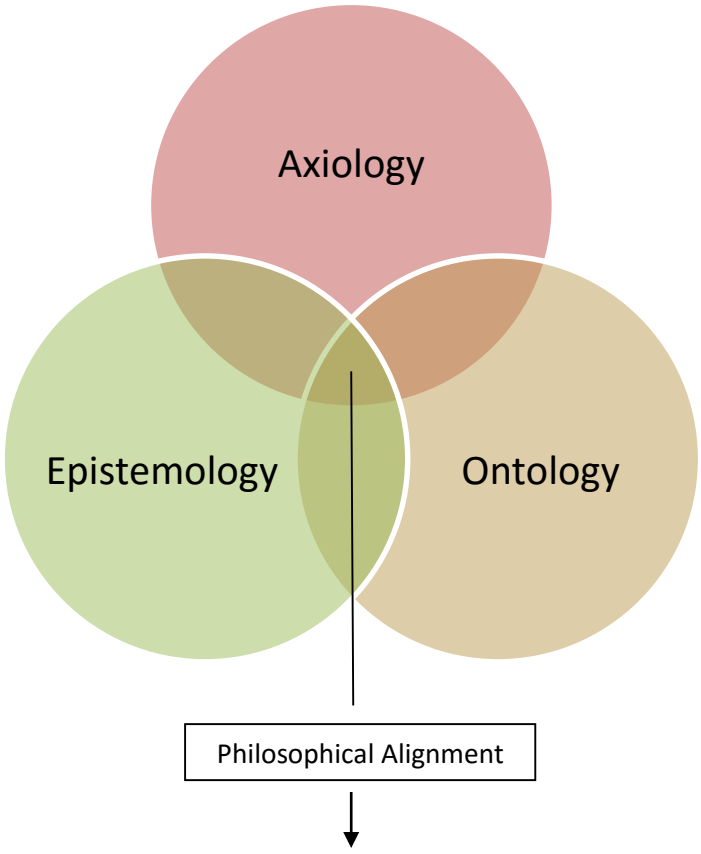


Figure 1.1.

This initial self-analysis served as my first real engagement with a reflexive process. Reflexivity is the process through which a researcher recognises, examines and understands how his or her own social background and how their assumptions can influence the research process (Hesse-Biber, 2007a). Reflexivity also enables researchers to be introspective, analyse the research process in response to participants, and to adjust and refine research goals as they learn more about those who they study (Kirsch, 1999). I recognise that it is impossible to not be reflexive throughout the thesis as my beliefs, experiences of general practice nursing, and feelings are part of the process of knowledge construction (Lynch, 2000; Hesse-Biber, 2007a).

However, I was aware from an early stage in the planning that as a clinician immersed within the practice nursing culture, I had potential to influence the research process. There was a need to therefore critically appraise my role, and to provide a clear account in the ethics of the process from the planned and unplanned moments for good scholarship (Klein, 1999). This can be demonstrated by the reflexivity throughout my thesis and how my thesis changed and evolved throughout the process. My aim therefore is not to give myself a sense of "reflexivity as an epistemological achievement" (Lynch, 2000 p. 46). My aim is to provide a clear account of my research as an important piece of good scholarship (Ackerley and True, 2010), and one that will contribute to the development of the practice nurse knowledge base and influence development of practice nurses' clinical skills in the future.

1.2 The Practice Problem

In 2003, I had my first introduction to research. My clinical base was selected as one of the research sites in researching accuracy of spirometry in general practice in Wales. I worked with a research fellow, undertaking spirometry assessments and reassessing diagnoses of COPD. At the same time, questionnaires were sent to general practice throughout Wales, attempting to determine the provision of spirometry services in Wales (Bolton et al, 2005).

Every consultation in general practice is read coded using the International Statistical Classification of Diseases and Related Health Problems (ICD) system, which was first mandated for use in the United Kingdom (UK) in 1995 (World Health Organisation (WHO), 2010; Health and Social Care Information Centre (HSCIC), 2015). It is the ICD-10 system (HSCIC, 2015) that facilitates clinical audit and enables the formation of chronic disease registers. The specific ICD -10 code for COPD, for example being H311. There are several similar codes beginning with H3 for related conditions such as chronic bronchitis and another code for emphysema. All the codes under the umbrella code of H, formulating the COPD register. This is the same for all other chronic diseases which have different numerics specific to the disease. In 2015, primary care clinicians take it for granted that chronic disease registers are accessible and visible to ensure the patient is sent for annually and offered review. In 2003, there was limited computer software, the software only having the means to identify all the patients with coded entries linking the patient to COPD.

I had a steep learning curve with information technology (IT) during this time, also with the developing of my clinical skills in spirometry assessment and interpretation. Each set of notes was initially reviewed and recoded as necessary. For example, an eight year old child on representing with a chest infection in 1999, had been coded as "acute on chronic bronchitis"

which had defaulted the child onto the COPD register. It was teamwork and my working with expert clinicians that enabled all adult patients on the COPD register to be sent for over a twelve month period, offered spirometry assessment, a review of diagnosis, recoding as needed and optimisation of treatment by April 2004 (Faulkner, 2005). We started with 417 patients who had COPD related codes on their medical records and finished with 186 patients, demonstrating that in my work place, COPD had been commonly miscoded and/or incorrectly diagnosed (Bolton et al, 2005).

Ten years later, the use of the spirometer has subsequently become an integral part of my care in the diagnosis and chronic disease management of patients suffering from COPD. I have a keen interest in COPD management and am passionate in improving services for a historically neglected patient group. I had minimal knowledge of spirometry or COPD care before moving to my post in South Wales, and feel that the past ten years have been extraordinary in my developing of clinical expertise and professional confidence.

However, not all practice nurses have developed clinical expertise or confidence with spirometry assessment and interpretation post-2004 as a result of the new General Medical Services (GMS) Contract (British Medical Association (BMA) and National Health Service (NHS) Confederation, 2003). . Over the past ten years, having lectured and mentored practice nurses throughout Wales on COPD care, my subjective observation is that although COPD knowledge seems to have improved, there continues to be a generalised lack of understanding of the value of spirometry. There also seems to be a generalised lack of confidence and competence in spirometry assessment and interpretation amongst practice nurses.

Realistically, this may be because practice nurses attend my teaching sessions to acquire new clinical skills with spirometry assessment and it could be argued that I would not necessarily teach or see experienced, confident practice nurses. However, my observations over the past decade have been that although I do teach some new practice nurses the basics of spirometric testing, overall it is the same practice nurses who attend my basic and advanced spirometry teaching sessions repeatedly. The same practice nurses appear to lack confidence with spirometry, verbally expressing their concerns and dissatisfaction with the procedure and regularly e-mailing me with queries relating to spirometry assessment and interpretation. This is in comparison to my subjective observations that that other areas of chronic disease management, such as pharmacological management of COPD seem to be managed competently.

It was the practice nurses' stories that became the primary impetus to undertake my doctoral research. It was also the realisation that the paper I had contributed to (Bolton et al, 2005), was still being cited in national and international journals, yet was out of date shortly after

publication due to the changes in COPD care in general practice post 2004. Post 2004, practice nurses have been providing the chronic disease care for COPD but there seems to be conflict in what the practice nurses were reporting and the fact that their stories did not seem to be acknowledged within the literature. There is a great deal of literature on how to undertake and interpret spirometric traces but little literature on (any) difficulties in undertaking and interpreting spirometry or overcoming (any) barriers to improve clinical practice and patient care. The practice nurses' voices seemed to be hidden.

1.2.1 The Research Question

There seemed to be a large, complicated picture of practice nursing, COPD as a chronic disease entity and also spirometry assessment and interpretation. In effect, these were three individual subject areas in their own right, but the more I thought about what I wanted to research and what answers I was looking for, the more the three areas had overlapping themes and concepts: therefore, I felt that all three inter-related areas needed to be examined.

Figure 1.2 represents the three overlapping themes and concepts that were identified.

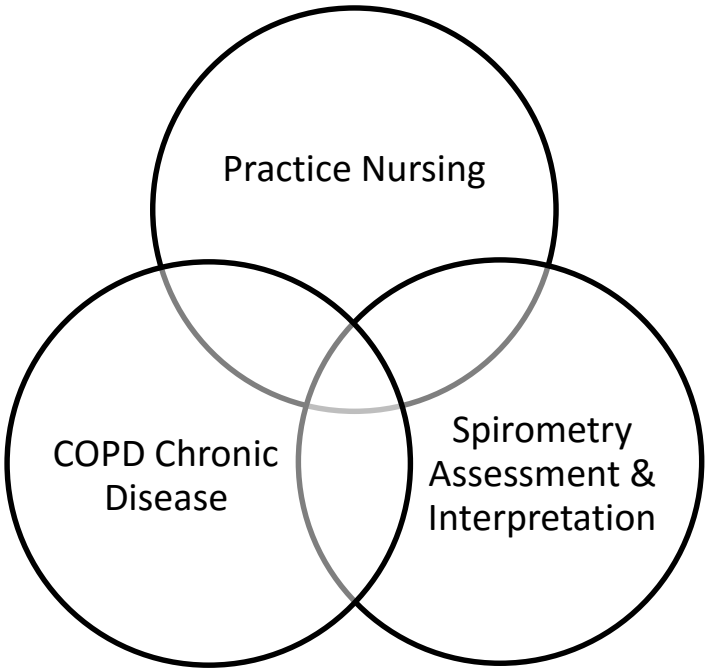


Figure 1.2.

As I thought about the three areas, several themes kept arising. Themes I identified were the parallels in lack of research within the practice nursing profession and lack of research in practice-nurse-led chronic disease COPD care; parallels in lack of service provision and historical therapeutic nihilism to COPD secondary to the association with smoking as a primary cause of the disease (Bellamy and Booker, 2008); and the parallels in practice nurse role development and service development for COPD. I had a subjective view from the start that practice nurses were struggling with spirometry assessment and interpretation for the chronic disease management of COPD. Confidence in undertaking and understanding the clinical procedure appeared to be a major issue, and appeared to be closely associated with anecdotally reported issues of clinical competence.

Durant-Laws (2005) describes how identification of philosophical alignment is a precursor to choosing an appropriate methodology, and describes another trinity which is the alignment between the researcher's philosophical alignment, the research paradigm, and the research methodology. The second trinity (Figure 1.3) serves to identify the research question.

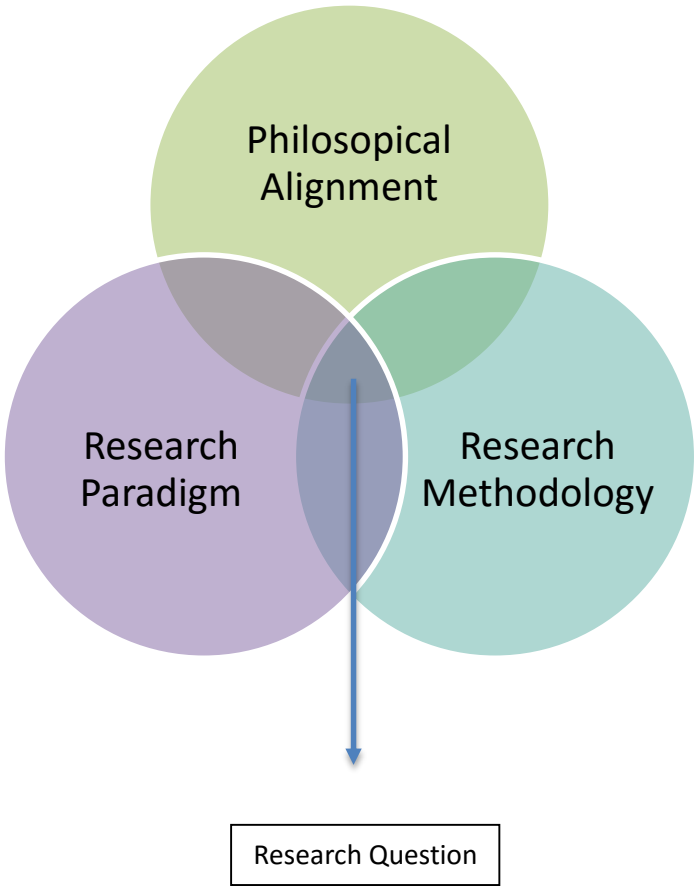


Figure 1.3. Identification of the Research Question

Immersed within the practice nurse culture, I was aware of the difficulties in access to practice nurses, as practice nurses work a variety of hours, days and shift times. I had decided at an early stage of planning the research that in order to maximise access to practice nurses and maximise data uptake across a large geographical area, I was going to undertake a mixed methods study. The research question therefore incorporated both quantitative and qualitative elements. This is to be discussed later, but I feel it important to introduce here to provide justification and an explanation for the rationale for the research question.

The research question is:

> "What are the barriers for practice nurses in accurate spirometry assessment and interpretation for chronic disease management of chronic obstructive pulmonary disease?"

1.2.2 Research Aims and Objectives

The aims of the study are:

- To identify the confidence of practice nurses undertaking and interpreting spirometry
- To ascertain what guidance or support exists for practice nurses when undertaking and interpreting routine annual spirometry screening for patients with diagnosed COPD, and how useful (any) existing support mechanisms are;
- To identify (any) barriers to practice nurses' provision of accurate spirometry assessment and interpretation for patients with diagnosed COPD;
- To articulate what processes/attempts are in place/have been made to address any existing barriers to accurate spirometry and interpretation.

The research objectives are:

- To undertake a systematic literature review of the empirical evidence pertaining to practice nurses and spirometry, and confidence and competence in clinical practice;
- To undertake phase one (quantitative strand) by sending a questionnaire to all the practice nurses working within the University Health Board (UHB)
- To undertake phase two (qualitative strand) by one-to-one qualitative interviews with an exploration of themes that have arisen from analysis of the quantitative data
- To analyse, present and discuss the phase one and phase two results
- To make recommendations for future practice

I found the research aims and objectives difficult. I recognise now that the challenge was that I wanted to research so much and try to find out as much information as I could, as this was

to be my only opportunity to find out everything about the fragmented picture that had been anecdotally related to me and that I had partially witnessed over the years. I initially set an impossibly long list of aims and objectives based on my subjective theories of the problems faced by practice nurses and my current knowledge of COPD and spirometry.

I recognise now that I had a professional and academic conflict. Being primarily a clinician, my lived experience with immersion within the practice nursing culture, with my critical understanding of the problems faced by practice nurses in undertaking accurate spirometry assessment and interpretation, was a professional barrier to forming academic aims and objectives to address the research question. It took several tutorials and a great deal of discussion to refocus on the academic as opposed to the clinical perspective, revise my lengthy list of research aims and formulate three practical and feasible aims.

1.2.3 Benefits and Justification

Practice nurses had commonly been expressing negativity towards spirometry as a clinical skill for several years, as previously stated. However, many of those practice nurses had already received training (often on more than one occasion). It is clear that attendance at study days, short courses and spirometry workshops was not enough to gain confidence and competence within clinical practice. There seemed to be lack of clarity on what form of training would meet clinical needs to gain expertise in spirometry assessment and interpretation for the chronic disease management of COPD in general practice.

The role of the practice nurse is to be discussed in section 1.3.1. However, it is pertinent to refer to the common nature of professional isolation in clinical practice which is unique to the practice nurse role. This factor also needing to be researched as not enough is known about the impact of professional isolation of practice nurses on professional development.

Although spirometry assessment and interpretation is a niche area and a small part of the practice nurse role; there is a need to address competence and confidence in spirometry practice in order to address the challenges to integrating a new clinical skill into core practice nursing work. The research findings will inform continuing professional development plans to promote learning and support for practice nurses, with benefits for spirometry practice and potentially other clinical skill sets.

1.3 Context of the Research Problem

Lung health in the UK is an issue that is historically underfunded in comparison to chronic diseases such as diabetes and coronary heart disease (British Lung Foundation (BLF), 2007; UK Clinical Research Collaboration, 2006). Annually, 30,000 people die from smoking-related lung diseases (Office for National Statistics, (ONS) 2011), which are the fifth leading cause of death in the UK (Halpin, 2011), yet the diseases continue to have a low profile in the UK (BLF, 2007).

COPD is one of the most common chronic diseases in general practice, yet prior to 2004, general practice respiratory services centred primarily on asthma. The last twenty years have seen an increased awareness of COPD as a cause of persistent symptoms and impaired quality of life (Calverley (2011). Although primary care providers have historically cared for most patients with COPD, at least until the patients develop very severe or end-stage disease, (Buist, 2006), the chronic disease management of COPD, with target attainment for financial remuneration has only been on the national primary care agenda for ten years (BMA and NHS Confederation, 2003). Services for the chronic disease management of COPD therefore still have some way to develop before becoming expertly managed on a par with diabetes and asthma. In general practice, I feel that poor spirometry (lung function assessment) is a key factor in hindering the development of practice-nurse-led clinical expertise in COPD chronic disease management.

Spirometry is the gold standard tool for the diagnosis, assessment and monitoring of COPD (Global Initiative for Chronic Obstructive Lung Disease (GOLD), 2011), yet spirometry has been underutilised in clinical practice (Buist, 2006; Han et al, 2007; Joo et al, 2008; Booker, 2008). In addition, the chronic disease management of COPD has been more often than not undertaken in the complete absence of any objective measure of lung function, with the role of spirometry poorly understood by primary care clinicians (Buist, 2006; Jenkins, 2009).

In General Practice, spirometry is utilised in two different ways: as a tool to support the diagnosis of COPD, and for the purpose of annual assessment and monitoring of the disease trajectory. For the purpose of this thesis, the focus will be on spirometry assessment/interpretation by practice nurses for the chronic disease management of COPD. My rationale being that not every practice nurse will have the clinical skills or relevant skills training to work at an advanced level of practice and interpret spirometry for diagnostic purposes. I consider challenges to spirometry assessment and interpretation for COPD diagnosis to be a separate area of research and one that can be addressed in future studies. However, all practice nurses who run respiratory clinics should be utilising spirometry as a tool for chronic disease monitoring and optimising of COPD care.

As part of my doctoral studies, I wanted to find out why spirometry seems to be an ongoing challenge for many practice nurses and why, despite regular training, practice nurses seem to lack confidence and competence in undertaking the clinical procedure. Although the practice nurse has become a major contributor to health provision in general practice over the past twenty years (Tinson, 2011), there can be diverse roles and skills, resulting in increasingly challenging communication and teamwork (Bayliss, 2014). I therefore also wanted to explore whether there were any particular issues with team working and communication that were affecting practice nurses' confidence and competence in spirometry use in clinical practice.

1.3.1 The Practice Nurse: The Historical and Policy Context

The role of the practice nurse cannot be discussed without reference to the impact of Government policy which has crucially served to define the historical working environment of practice nurses within primary care. The General Practice (GP) Charter in 1966 (Gillie, 1963) was the first legislation that gave general practitioners (GPs) incentives for improving premises and the reimbursement of ancillary staff, which culminated in the employment of the first practice nurses (MacDougald et al, 2001; Hampson, 2004).

Morrell (2008: p. 318), in his review of the early days of general practice, describes general practice and practice nurses thus:

> …the Doctor was usually a man, and his wife was expected to provide support in the day to day running of the practice...the practice nurse was there to undertake delegated tasks in the surgery...as a result morale improved and general practitioners began to feel that they were respected by both patients and hospital specialists

From its inception, Cheek and Rudge (1994), argue the role of the practice nurse was subservient to that of the GP and was shaped by patriarchal professional domination with task allocation. Subservient referring to the "dominant physician dynamic" within the historical physician-nurse relationship (Andrist et al, 2006: p.41). Hartmann (1981), describing men's control over women's labour power as being the material base on which patriarchy rests. As stated in Chapter One, it could be argued that modern general practice is no longer male dominated (Thomas, 2014) therefore Hartmann's (1981) description is obsolete. Davies (1995), discusses how organisations should not be viewed as being occupied by people with gendered identities but they must be seen as social constructions that arise from a gendered masculine vision of the world that call on masculinity for their legitimation and affirmation. Davies's observations (Davies, 2005) could also be considered dated. However, one could equally argue that her observations are still relevant to the modern general practice

environment and that practice nurses continue to be suffer from professional disenfranchisement within a still gendered environment.

The social characteristics of early practice nurses were that the majority were married, had children, and were returning to work after a period of caring for a young family (Greenfield et al, 1987). As a result, historically GPs have further perpetuated patriarchal dominance by employing nurses who did not want an explicit career pathway (Carey, 2000). However, Carey (2000) can be criticised as an explicit career framework for general practice nursing did not exist in 2000 and there is still no nationally recognised training programme to prepare practice nurses for their unique role (Hill, 2010; QNI, 2016). There are training programmes available from module to degree level throughout the UK that have been developed in response to local need for training, rather than developing nationally (Longbottom et al, 2006). As power is maintained with knowledge development; critically, medical dominance (Carey, 2000) has possibly been perpetuated by the lack of national uniform training for practice nurses.

However a willingness to work "only" part-time can effectively also close off opportunities for career progression (Davies, 1995: p.100). Although practice nursing is currently the largest branch of primary care nurses (MacDougald et al, 2001; QNI, 2016), it is still predominantly a part-time role and by the nature of part-time employment, practice nurses were and still are working as relatively isolated practitioners and professionally accountable to another professional group: that is, the medical profession as employers (O'Donnell et al, 2010; Hill, 2010; QNI, 2016). Critically, in becoming professionally accountable to another professional group, practice nurses have increased their professional vulnerability in moving away from the larger professional body of nursing to a body that does not understand the epistemological and ontological essence of nursing (Hill, 2010). This "professional gulf" has been described as separating the majority of practice nurses in terms of their employer from other groups of nurses and Specialist Community Public Health Nurses working in primary care by (Hill, 2010).

Leng (2013) defines the philosophical medical model as that of the focus on the defect, or dysfunction within the patient: a problem solving approach of medical history, physical examination, and diagnostic tests providing the basis for the medically oriented task of identification and treatment of a specific illness. Examples of medically oriented tasks or procedures being those of venepuncture, electrocardiograph assessment and chronic disease management which, in general practice today, are now considered to be core elements of the practice nurse role (QNI, 2016). The GMS Contract (BMA and NHS Confederation, 2003) has further shifted the focus of practice nurses from patient care to procedural care with the focus on financial remuneration for target attainment for chronic disease management and screening. The shift in practice nurses' roles from traditional nursing care to medically oriented

tasks; that is tasks that diagnose and treat conditions (Walby and Greenwell, 2009) has served to isolate the practice nurse's role and widened the professional gulf with the rest of the nursing profession which still exists today.

Recommendations have been made for practice nursing to become more political, lead health care reforms and develop its own identity away from medically oriented tasks to promote a new contextual framework for care that is patient-care driven and underpinned by holistic practice (Witz, 1990; Waddington, 2010; QNI, 2016). Although practice nurses are "well placed" to lead and influence policy that addresses improving care quality (Thomas and White, 2007: p. 643), challenges in power dynamics and professional cultures have arguably resulted in lack of political voice and presence in the policy making arena for practice nurses (Hill, 2010).

Critical thinking skills are required to promote sustainable emancipatory change and support and develop clinical practice (Western, 2006). Kramer and Schmalenberg (1993), discuss how a necessary precursor for both autonomy and power within nursing practice is that of competence which has its foundation in educational preparation. Hill (2010) is in agreement, recommending that to take on proactive roles in chronic disease management, practice nurses need to be supported, trained and have access to professional support. However, the paradox is that the general practice environment does not appear to be conducive to fostering clinical competence as access to training and availability of training remains a challenge (Longbottom et al, 2006; QNI, 2016). Therefore competence within clinical practice, for practice nurses, is arguably not achievable until a robust national work plan is nationally, regionally and locally implemented to promote uniform preparation and ongoing continual professional development (QNI, 2016).

The QNI (2016) comment on the wide variety of roles that many practice nurses have as their employing organisations dictate the services required. This is another key factor in the development of clinical competence through self-empowerment. Manojlovitvh (2007) is critical of nursing inability to self-empower, stating that power over the content, context and competence of nursing practice contributes to the feelings of self-empowerment. However, employer organisational cultures may impede practitioners' confidence and ability to overcome potentially difficult issues as power is maintained through organisational culture (Waddington, 2010). This being in contrast to the practice nursing environment being described as one that can adapt and provide flexible opportunities for staff to develop (Crossman, 2009; QNI, 2016).

The new GP Contract of 1990 (Department of Health (DoH), 1990) had the potential to regulate and develop practice nursing as a profession as it was the first benchmark legislation

leading to the biggest ever expansion of both the role and numbers of practice nurses employed in general practice. Luft and Smith (1994) reported a 60% increase in practice nurse numbers in 1990 alone. The impetus for legislative change was the spiralling costs of primary and secondary health care, the driver to contain costs introduced by the Conservative Government as the introduction of market forces into the NHS (Loudon et al, 1998). The setting of target payments and incentives for immunisations, cervical cytology and health checks resulting in GPs being strongly motivated to employ practice nurses to provide primary health care services which did not directly require a GP.

The scope for practice nurses to develop their own knowledge base and move away from the medical model was therefore promising. However, the enforced radical changes in the philosophy of health care provision, from a focus on the dominant model of curing illness to that of a philosophical model of caring and maintaining health (DoH, 1990) was not universally welcomed by GPs (Morrell, 1998; Heath, 2004). Edwards and Wacjman (2005) describe how the concept of hegemony refers to the ways in which certain sets of ideas become established as natural and in which a dominated group activity consents and helps to reproduce its own domination. In general practice, hegemony is achieved by the professional domination of the practice nurses. Critically, the new GP contract (DoH, 1990) was not welcomed by GPs (Morrell, 1998; Heath, 2004) as the changes to the philosophy of heath care provision critically challenged and started breaking down medical hegemony. The enforced sharing of common knowledge and practice income dependent on the expansion of nursing numbers, roles and clinical skills, resulting in the weakening of the covert operation of power of the medical profession (Traynor, 2006).

For the first time, practice nurses generated practice income from target attainment, thus raising their profile and increasing their status and value as employees within the primary care team. However, although the medical model was weakened, resistance to the development of practice nursing and a practice nursing knowledge base was still a force. However, in 1994, the reluctance of practice nurses to take responsibility for autonomous decision-making was clearly documented (Carey, 2000). Practice nurses themselves signalled that they did not want to challenge professional dominance in primary care and were happy with their status (Carey, 2000).

Twenty years later, medical professional dominance has been maintained, with often poor working conditions, professional isolation and difficulties in achieving or maintaining clinical competence by accessing study leave or obtaining financial support to attend study days (Crossman, 2006; QNI, 2016). The Working in Partnership Programme (WiPP) SNAPshot Survey (WiPP, 2008) reported the practice nurse role to be wide and varied throughout the

UK and highlighted that educational preparation to support the role was often inadequate, with many nurses having problems accessing appropriate education. The survey also recognised the potential for newly qualified nurses to be working unsupervised in general practice, with little education and support for the role, and inadequate resources for support and advice in clinical practice. The survey findings also suggested that some nurses were performing tasks for which they had not received adequate training, with this lack of competence having implications for patient safety (WiPP, 2008). A more recent survey of 3,400 general practice nurses in 2016 virtually replicated the findings, reporting little change in educational preparation for the role and reporting that 47% of practice nurses have problems with GP employers supporting their professional development (QNI, 2016).

This strengthens the earlier argument that professional isolation from the wider nursing body has served to increase the vulnerability of the practice nurse. Criticism can be levied at the practice nurse for failure to take a firm stance and adhere to the Code of Conduct (Nursing and Midwifery Council (NMC), 2008). However, it could equally be argued that the vulnerability has arisen as a result of the historical professional dominance of the practice nursing profession, resulting in the subsequent loss of the professional voice of the nurse to speak out for fear of job loss (Hart, 2004; Young, 2008).

Practice nurses have always been directly employed by GPs and work outside the NHS nursing structure and therefore are not NHS employees. This is in stark contrast to nursing colleagues employed by larger provider organisations, whose terms and conditions are determined at a more remote and collective level and also through collective bargaining (QNI, 2016). Larger provider organisations, such as NHS organisations being the employer of the majority of trained nurses working within the UK (DoH, 2015). The direct employment by GPs is possibly another factor in the creation of power imbalances between medical and nursing professions and as a result, has perpetuated medical professional dominance. Carey (2000) stated that it is the nature of practice nurse employment that has the greatest potential to inhibit practice nurses' development. Hill (2010) in agreement, describing how the nature of practice nurse employment separates the majority of practice nurses from other groups of nurses and specialist community public health nurses working in primary care, such as district nurses, health visitors and school nurses. Terms and conditions of employment may also be different compared to allied community nursing disciplines (Hill, 2006). Critically the nature of employment may have also served to further isolate practice nursing from the wider nursing profession and promote lack of structured terms and conditions.

The new NHS pay and career structure, Agenda for Change (DoH, 1999), highlighted the need for changes to pay, career structure and conditions of employment within the NHS, but there

was no mandatory requirement for the new terms and conditions of employment to be enforced on GPs, who work as independent contractors in the providing of health services for local populations (Royal College of General Practitioners (RCGP), 2004). To date, not all GPs have adopted the Agenda for Change framework (DoH, 1999) with many practice nurses still being paid according to the Whitley Scale framework that pre dated Agenda for Change (QNI,2016).

The GMS Contract (BMA and NHS Confederation, 2003) was a positive development for practice nursing in that the number of practice nurses quadrupled after 2004 (McDonald et al, 2009). Hill (2010) describing the new GMS Contract (BMA and NHS Confederation) as positive for practice nurses, in offering new opportunities to work in different ways which in turn has implications for the practice to increase income generation. Opportunities arose for practice nursing to develop its own knowledge base, to network and reduce professional isolation with the increase in numbers.

Acceptance of the new GMS Contract by general practitioners (BMA and NHS Confederation, 2003) was confirmed nationally by means of a postal ballot. However, for practice nurses, there was a lack of political debate with the impact on the future role of the practice nurse addressed only after national acceptance of the contract (Crossman, 2006). New tensions of job dissatisfaction and increased workload arose within the primary care team (McDonald et al, 2009) following the lack of clarity about new roles, lack of support available to support new roles and the “risks” to job security with new innovative practices (Crossman, 2006).

The GMS Contract (BMA and NHS Confederation, 2003) also challenged the traditional skill mix within primary care of historical precedent and conflicts of power (RCGP, 2004), with the practice nurse role strengthening and further developing as an income generator for chronic disease management. The Quality and Outcomes Framework (QOF) within the contract being linked to 25% of practice income to performance measures, financial remuneration focused largely on chronic disease management (Guthrie et al, 2006). Within each indicator, measured performance was related to points, with the number of points varying according to perceived workload and importance. In 2004-05, 550 points were available across the clinical domains of chronic disease management, with each point being worth £75 (to an average sized practice of approximately 5,000 patients), increasing to £277/point in 2009/10.

However, although the value of practice nurses as income generators has increased, since 2004, salaries have only increased in line with or below inflation. This is in direct contrast to the pay rise experienced by GPs (Robinson, 2008), indeed the National Audit Office’s assessment of the impact of the GMS Contract (BMA and NHS Confederation, 2003) highlighted the 58% rise in GP partners’ pay and that GPs worked an average of seven hours

a week less following removal of the responsibility for out-of-hours care (NAO, 2008). This result was an increase in the percentage of practice nurse consultations from 21% to 34%. An increase which saw a substantial rise in GPs' income without any personal reward for the practice nurse (Robinson, 2008). These factors arguably widened the gulf between medical and nursing professions in general practice and had detrimental effects on practice nurse morale (Robinson, 2008: McDonald et al, 2009). Manojlovitch (2007) argues that a psychological belief in one's ability to be empowered is a key component in promoting morale within the workplace. Belief in one's ability combined with low morale within the workplace is challenging and may not be enough to facilitate empowerment; Chandler (1992: p.66) describing how a truly empowering environment should "nurture reciprocal professional relationships".

Today, practice nurses deliver an increased proportion of the practice workload, including a significant part of the QOF (NAO, 2008; QNI, 2016). Young (2008) emphasises that in order for practice nurses to achieve their potential in improving health and social care, practice nurses must be educated rewarded, supported, valued and respected. However, practice nurses have no vested interest in the QOF, as their income does not rest solely on achievements of targets to generate their income and there is no personal reward for target achievements. Turner et al (2007) are critical of practice nurses, stating that they may be contributing to the sub-professional role boundaries held by nurses themselves, within which nurses are subservient to and passively accept the role changes enforced by the medical profession. However, the opportunity for advancement or opportunity to be involved in activities beyond one's job description and access to support for one's job responsibilities and decision making are structural conditions identified by Kanter (1993) as being key contributors to empowerment. Arguably, practice nurses working within the environment of general practice may feel powerless as they have not been exposed enough to empowering work place structures as identified by Kanter (1993).

Studies on skill mix within primary care have surmised that effective team working requires the devolution of power across the primary health care team (RCGP, 2004). Acknowledgement of the power imbalances within general practice teams is made yet the general practice workplace arguably does not have the requisite structures that promote empowerment. Hegemony is entrenched although it does have to be acknowledged that the boundaries between the two professions may have blurred in modern times with the raised profile of the practice nurse as income generator. Critically, the future of practice nursing will continue to be shaped in response to developments arising from the GMS Contract (BMA and NHS Confederation, 2003), that is: to maximise income generation (Hill, 2010), in the absence of personal reward or empowerment.

Negative impacts on the core values of nursing care and on patient care following the new working directives with the QOF have been freely expressed with criticism that practice nurses' roles have been again shaped by the medical profession and not by the practice nurses themselves (Turner et al, 2007; McGregor et al, 2008). Malden (2012), describes how nursing image is closely ties to the nurses role and identity, influencing clinical performance, job satisfaction and quality of care. There are emerging signs of individual practice nurses becoming more mobile in clinical practice within the local University Health Board. This could be an indication that practice nurses are beginning to be positively self-empowered within the locality, and are rejecting poor terms and conditions of employment. However, this is unproven.

General practice nursing is an area that needs further research to explore and identify challenges to professional practice and nursing role development. The historical legislative development of the role, with the distinct cultural patterns that exist across the practice nursing and medical profession dynamics, are barriers to developing practice (Hawkins and Shohet, 2006). Part-time employment, isolation from the wider body of nursing and working as relatively isolated practitioners professionally accountable to another professional group (O'Donnell et al, 2010; Hill, 2010; QNI, 2016), has also challenged the development of professional competence and development of a specialised general practice nursing knowledge base. As research within this field is limited, and is mainly focused on medical challenges to the implementation of the new contract, the intention of this study is to focus on the role of the practice nurse in the primary care workplace.

1.3.2 Chronic Obstructive Pulmonary Disease

COPD is characterised by airflow limitation that is not fully reversible, and is caused by noxious particles or gases; most commonly in the Western world by cigarette smoke (GOLD, 2011). Not every smoker will develop the disease, however, at least 50% of smokers will develop some degree of airflow limitation (Radin and Cote, 2008). Poor nutrition in childhood, socio-economic status and occupational exposure to biomass fuels are also contributory factors to the disease (Sharma, 2010). It is an incurable but treatable chronic disease (Upton et al, 2010), affecting the lungs in the form of chronic bronchitis with small airways disease and emphysema (Nazir and Erbland, 2009).

COPD is associated with slow, insidious onset of symptoms with loss of lung function (DoH, 2011). Early symptoms include progressive breathlessness on exertion with activity compensation, a chronic productive cough, frequent winter "chest infections" and wheezing

(Greener, 2011). Symptoms of advanced disease include severe breathlessness with significantly reduced exercise tolerance, described as the predominant and the most distressing and disabling symptom experienced within the disease trajectory (Barnett, 2009), nutritional impairment (weight loss or obesity with fat free mass depletion), chronic cough with sputum production, hypoxia, cor pulmonale and frequent prolonged exacerbations as the disease severity progresses (Steuten et al, 2006). Exacerbations worsen lung function and health status, cause considerable mortality (Wedzicha and Wilkinson, 2006; Anzueto, 2010), and impose a major burden on health care systems within the UK. Exacerbations are one of the most costly inpatient admissions to be treated by the NHS (DoH, 2011) and the second most common cause of medical hospital admissions (Wedzicha and Seemungal, 2007).

Globally, COPD was responsible for 3.7 million deaths in 2005 and will rank as the third leading cause of death by 2020 (GOLD, 2011). Worldwide prevalence of COPD in men has reached a plateau, whilst prevalence in women is increasing (Kamil et al, 2013; Sorheim et al, 2013). Women tend to have more severe disease and earlier onset of disease, leading to severe symptoms, even with lower smoking exposure (Sorheim et al, 2013).

Within the UK, smoking prevalence is approximately 20% of all adults aged 16 and over in England (Health and Social Care Information Centre, 2013), in comparison to 23% of all adults aged 16 and over in Wales (Welsh Government, 2012). COPD is historically associated with working men of low socio-economic status and economic disadvantage (Gershon et al, 2012). Men aged 20-64 employed in unskilled manual occupations in England and Wales are around fourteen times more likely to die from COPD than men employed in professional roles, and around seven times more likely to have the disease than those in managerial and technical occupations (Office for National Statistics, 2011).

The clinical burden of disease has a high economic toll, costing the UK economy over 1.5 billion per annum, inclusive of £492 million in direct costs and £982 million in indirect costs, each year (Rennard and Vestbo, 2006): indirect costs are defined as unpaid income tax, state benefits and lost productivity (Baldwin et al, 2010). It is also estimated that lung disease, and particularly COPD, costs business 24 million working days in sick leave and 3.8 billion in direct costs per annum in lost productivity (BLF, 2007). On average, patients with COPD consult a GP 1.4 million times annually, which is four times the number of annual consultations for angina (Greener, 2011).

Historically, high profile National Service Frameworks and national guidelines have been long established for the management of chronic diseases such as asthma (BTS, 1993), diabetes (DoH, 2001), and heart disease (DoH, 2000). The aim of the National Service Frameworks and national guidelines being to improve long term strategies for care and set measurable

goals of care within set time frames (DoH, 2005). Although the first COPD guidelines were published in 1997 (BTS, 1997), they were then not updated until 2004 (NCGC, 2004), then six years later in 2010 (NCGC, 2010). A National Service Framework for chronic respiratory disease has never been published and it was not until 2011 that the Outcomes strategy for COPD and Asthma in England was published (DoH, 2011), followed in 2014 by the publication of the Respiratory Health Delivery Plan at local level for Wales (Welsh Government 2014).

One explanation for the lengthy time in updating the national guidelines is most probably the lack of longitudinal research, as COPD has only been on the primary care agenda for target achievement and financial remuneration since 2004 (BMA and NHS Confederation, 2003). However, with the failure of annual updates in comparison to the National Guidelines for Asthma (BTS and Scottish Intercollegiate Guidelines Network (SIGN), 2012), arguably the momentum for updating and subsequently motivating and driving clinical practice and knowledge has been slow.

In the UK, the prevalence of COPD is not known but estimated at between 2-4%, representing between 982,000 and 1.96 million people (Healthcare Commission, 2006). An additional estimated 2.8 million people, equivalent to 13% of the population of England aged 35 and over, are unaware that they have a progressive disease that could have devastating long-term physical and socio-economic impacts on their lives (Shahab et al, 2006; BLF, 2007). This is due to the insidious onset of breathlessness with people commonly failing to recognise they are developing lung disease (Shahab et al, 2006; Bellamy and Booker, 2008: Halpin, 2011)

Wales has been described as a geographical “hot spot” for undiagnosed COPD (BLF, 2007) and COPD prevalence in Wales ranges from 1.28% to 2.97% in 2010 (HOWIS, 2010). The variation in prevalence at odds with the socio-economic profile of socio-economic deprivation in Wales (BLF, 2007). This suggesting that chronic disease registers continue to be inaccurate and do not reflect the true prevalence of COPD within areas of socio-economic deprivation.

The failure of screening and diagnosis of new patients to add to the disease registers from the 2,800 “missing million” (BLF, 2007) is possibly a criticism that can be levied at primary care clinicians, after the profile of COPD was raised post 2004. In primary care, critically, the smaller the chronic disease register, the less work to undertake for financial remuneration. This is a caustic criticism, yet one that can be levelled with the well-documented increase in workload and the focus on target achievement (Booker, 2005; McGregor et al, 2008) for financial remuneration post-2004. Also, with significantly increased workloads, in order to gain maximum financial remuneration from QOF targets (BMA and NHS Confederation, 2003), GPs would be forced to employ more practice nurses out of the global sum, therefore potentially eroding the practice and their own personal profits.

Calderon-Larragna et al (2011) examined markers of the quantity and quality of COPD care, including numbers of GPs and practice nurses per thousand patients, in relation to admission rates for exacerbations of COPD. Practice nurse supply was found to be inversely related to admission rates, suggesting that employing more practice nurses might reduce admissions. The opposite was found for diabetic admissions, which suggests that the relationship between practice nurse supply and admissions may be disease-specific (Griffiths et al, 2010). This complex picture may be explained by COPD services for chronic disease management being in their infancy in primary care. However, it may be reflective of a lack of investment in practice nurse education and in house support for practice nurses to meet the demands of the GMS Contract (BMA and NHS Confederation, 2003).

Data from the World Health Organisation (WHO) in 2008 showed that premature mortality from COPD in the UK was almost twice as high as the European average (WHO, 2008). As the disease is commonly diagnosed in the latter stages, by which time half the lung function is lost and the opportunity to prevent deterioration is limited (Walters et al, 2008a), this is not a surprising statistic. However, it is also known that late presentation to general practice is commonly made, probably as a result of the insidious nature of the disease itself, leading to lack of self-awareness of deteriorating airflow obstruction (Bellamy and Booker, 2008). Self-blame, guilt and shame at smoking are also reasons for late presentation (Sheridan et al, 2011; Halding et al, 2011). Halpin (2011), described the "normalisation" of COPD symptoms in people whose family and friends smoke and have similar symptoms, preventing people from seeking medical advice. I would add denial to the normalisation of symptoms, with the readiness to attribute breathlessness to other co-existent diseases, such as ischaemic heart disease or diabetes, or to blame poor living conditions and commonly, family stressors.

Historically, COPD has been viewed with "treatment nihilism" with an underserved disinterest in suffering by clinicians, many of whom viewed the condition as a dirty disease and one that was self-inflicted (White, 2010: p.576; Zoumot et al, 2014: p.1). It is also described as a "dull condition" for lack of public awareness and research investment (Bellamy and Booker, 2008, p. 1). The link between COPD and smoking has also been blamed for the low level interest amongst primary and secondary care physicians (Bellamy and Booker, 2008; Matera and Cazzola, 2012). Ironically, it was the predecessors of current doctors and nurses who were the social leaders of the smoking addiction (White, 2010). Arguably, nihilism towards the disease is still present: Barnes et al (2014) discuss how few GPs regard reduction of exacerbations (i.e. chronic disease management) as a priority. Rossi and Polese (2013), call for a paradigm shift away from the unjustified nihilistic approach to COPD and towards considering it as a simultaneously preventable and treatable disease. In addition, to support my critique, there are criticisms of misdiagnosis and findings of neglect by health care services

(Health Care Commission, 2006), supported by the widespread geographical variation in prevalence (Bolton et al, 2005).

Critically, the financially driven culture is not the best culture for the promotion of best clinical practice. The QOF (BMA and NHS Confederation, 2003) has been long criticised as a potential box-ticking exercise (Booker, 2005; Matthews-King, 2014; Roberts, 2015), and as a means of offering the minimal standards of care possible to achieve maximum financial remuneration. Therefore, in summary, COPD as a chronic disease has had a raised profile in the past ten years as a result of changes to legislation. The disease itself is more common amongst low socio-economic groups, due to high smoking prevalence, occupational exposure and poor nutrition in childhood (Sharma, 2010). However, COPD services within primary care are a complex picture, yet one that has a co-dependent, symbiotic relationship with target attainment and financial remuneration. Arguably, without the financial remuneration, primary care services for COPD chronic disease management would still not be in existence, given the historical therapeutic nihilism and negativity towards the disease perpetuating poor service provision in the general practice workplace.

1.3.3 Spirometry Assessment and Interpretation

Spirometry is the assessment of lung function and is the gold standard tool for the diagnosis, assessment and monitoring of COPD (GOLD, 2011). A spirometer measures the dynamic total volumes of air from a forced expiration (FVC) or slow expiration (SVC), and the first expiratory volume in one second of the forced exhalation, the FEV_1 (Booker, 2008). The ratio of FEV_1 to FVC (or FEV_1/FVC) indicates the degree of airflow obstruction by providing the volume of air exhaled in the first second, expressed as a percentage of the total volume of air exhaled from maximum inhalation to maximum exhalation (Booker, 2009). Graphical displays of the volume/time and flow/volume are also required to allow technical procedural errors to be prevented (Kaplan and Pinnock, 2010).

Spirometry assessment should be undertaken to assess bronchodilator response to treatment (NCGC, 2010), to stage severity of airflow obstruction, to optimise pharmacological management and monitor disease progression (Wallace and Troy, 2006). After diagnosis, spirometry should be performed annually in mild to moderate disease and six monthly in the very severe disease category to monitor lung function and assess for deterioration (Freeman, 2010). If done correctly, spirometry can inform medical decision-making, maximise care and avoid prescribing of expensive unnecessary inhaler medications (Enright and Schermer, 2013). Poor quality spirometry is expensive and harmful to the patient, in the prescribing of

unnecessary medication and potentially putting the patient at risk of side effects from medication that was not required in the first place (Levy et al, 2009).

In comparison to the peak flow meter used to monitor airflow obstruction in asthma, spirometry is more in-depth, and requires expert knowledge in the calibration, process and interpretation of lung function parameters (Levy et al, 2009). Also in comparison to peak flow monitoring, spirometry can be arduous for the patient and it may take up to half an hour to obtain accurate, credible results. Therefore, not every patient is suitable to undertake spirometry, and careful patient screening is necessary to minimise adverse events during and after the procedure (Martin, 2008; Cooper, 2011).

For years, health care professionals such as physiotherapists and physicians have used spirometry assessment and interpretation for a range of chronic conditions and for research purposes within the secondary care environment (Rodriguez Hortal and Hjelte, 2014; Valenza-Demet et al, 2014; Cho et al. 2014). From 1st April 2004, practice nurses were expected to become competent virtually overnight in a new skill that was not a core skill in primary care (White et al, 2007). The literature acknowledges difficulties and challenges to quality control of spirometry (Johns et al, 2006; Johansen, 2007; Yawn et al, 2007), and arguably, spirometry is still not fully understood in primary care, with training needs underestimated (Jenkins, 2009). Jenkins (2009), described spirometry as the simplest and most widely undertaken test for the purposes of diagnosis and assessment of respiratory disease, suggested that it is challenging. She stated that a fundamental misunderstanding among GPs is that it is a simple test requiring minimal skill (Jenkins, 2009).

Practice nurses now currently provide the majority of chronic disease management in primary care (Robinson, 2008; O'Donnell et al, 2010), which has been delegated to them by GPs (Leese, 2006). However, as the chronic disease management of COPD has never historically been within the GP domain, with spirometry underutilised in clinical practice (Buist, 2006; Han et al, 2007; Joo et al, 2008; Booker, 2008). In addition, as the role of spirometry has been poorly understood by primary care clinicians (Buist, 2006), critically, the knowledge and clinical skills associated with spirometry assessment and interpretation have been impossible to cascade down the general practice team. With such a new, challenging area of clinical expertise, both professions should ideally have undergone training to understand spirometry and jointly develop services in primary care. This is the case with diabetes, where increasing numbers of GPs are enrolling on postgraduate diploma courses (Carney and Helliwell, 1995).

Although national recommendations have been made for standardisation of training (Levy et al, 2009; Duffin et al, 2013; Thomas et al, 2014; Welsh Government, 2014), post-2004, training has not been mandatory or accredited, and to date, there is still no mandatory training. This

is inconsistent with the National Guidelines (NCGC, 2010), which recommend that all health care professionals involved in the care of people with COPD should have access to spirometry and be competent in the interpretation of the results. This is not the situation in my locality as not every general practice has a spirometer. Decisions have clearly been made to forgo remuneration for the attainment of challenging annual targets of spirometry assessment. Unfortunately, this is an example of "opting out" of non-mandatory care, as the QOF indicators (BMA and NHS Confederation, 2003) provide a framework for additional "pay for performance" care (Lester et al, 2013). Critically, patients' best interests have therefore not been served, and I support Lester et al's (2013) accusation of the negative impact of pay for performance on medical professionalism.

In addition, further to the UK guidance on recommendations on spirometry assessment (NCGC, 2010), the concept and definition of competence is also controversial, ambiguous and in some cases contradictory and subjective (Watson et al, 2002; Dolan, 2003; Cowan et al, 2005). This raises questions surrounding the concepts of confidence and competence with spirometry assessment and interpretation that I feel are hidden tensions within general practice nursing. I will therefore review the relationship between competence and confidence further in Chapter Two, to determine the impact that this relationship has on successful, high quality practice-nurse-led spirometry for chronic disease management of COPD in general practice.

1.4 Summary of Chapter One

In summary, justification for the research has been made by contextualising the clinical skill of spirometry within the general practice nursing environment. The research question has been identified after consideration of and identification of my philosophical alignment. The research aims, objectives and intended outcomes have been presented.

The historical development of practice nurse role has been introduced in addition to the external forces of legislation that have affected the development of the role. Consideration has been made of the gendered environment of general practice and COPD as a chronic disease entity has been introduced and critiqued. An explanation of spirometry assessment within the general practice environment has been given, with pertinent issues such as the lack of standardised national training for the clinical skill discussed. The concepts of confidence and competence as potential hidden tensions affecting the standard of the spirometric procedure have been introduced, and the intention stated of exploring the concepts of confidence and competence relating to spirometry assessment by practice nurses.

Chapter 2 Literature Review

2.1 Introduction

This chapter will introduce the reader to the first section demonstrating a review of the empirical evidence pertaining to practice nurses and general practice spirometry (Figure 2.1) then competence and confidence within clinical practice (Figure 2.2). The literature review will be structured around the following questions to indicate to what extent the questions can be answered by the studies found:

i) General practice spirometry

- Is COPD being diagnosed correctly by means of spirometric assessment in general practice?
- What are (any) physician attitudes to COPD?
- What is the quality of primary care spirometry?

ii) The practice nurse and spirometry

- What training has been undertaken by practice nurses for spirometry assessment/interpretation?
- Are there any reported barriers to accurate spirometry assessment and interpretation in general practice?

The second section of the literature review will then be introduced. The literature review within the second section will be structured around the following questions to indicate to what extent the questions can be answered by the studies found:

i) Confidence and competence

- Are there any reported issues of confidence and competence relating to quality spirometric assessment and interpretation for COPD chronic disease management in general practice?
- How does the empirical data define competence and competence?
- Is the concept of confidence and competence within nursing comparable to other professions?

Discussion of the empirical evidence within both sections will then inform the development of the research question and consideration of the theoretical frameworks, detailed in Chapter 3.

2.2 Literature Search Strategy

When searching for literature relevant to spirometry and practice nursing, the search focused on literature published after 2004 to present day. 2004 was when spirometry for chronic disease management for COPD emerged within primary care, later becoming an established part of chronic disease care for COPD.

I first undertook the literature search in July 2013 and found the process challenging as I had to keep adding key words to find any published papers at all. Apart from articles on recommending best clinical practice for practice nurses undertaking the procedure, and basic interpretation, little empirical evidence was found regarding reported challenges and barriers to practice nurses undertaking spirometry. In addition, although there was reference to confidence of practice nurses in the reporting of spirometry results within two papers, I felt there was not enough evidence presented to enable an in depth exploration of the two concepts of confidence and competence. The search methodology is demonstrated in table 2.1.

Table 2.1. Search Methodology One

Electronic databases accessed	Applied Social Sciences Index and Abstracts (ASSIA) Cochrane Database of Systematic Reviews Cumulative Index and Allied Literature (CINAHL) Databases of the National Library of Medicine (MEDLINE) OVID SP The British Nursing Index The Joanna Briggs Institute Web of Science
Key words used	Chronic Obstructive Pulmonary Disease, COPD, spirometry, spirometric, training, general practice*, practice nurs*, nurs*
Timeframe	2004 – 2014
Inclusion criteria	English language articles only Peer reviewed journals
Exclusion Criteria	Non-English language Low quality journals
Back chaining	Back chaining of articles selected from electronic search allowing manual retrieval of books and articles relevant to the topic.
National Publications	Department of Health Publications, NICE, BTS Guidance.

Inclusive of back chaining, fifty eight papers were identified. On screening of the article abstracts, thirty nine papers were excluded as they were not relevant to practice nurses and spirometry for the chronic disease management of COPD in general practice. The full text of the remaining articles were screened for eligibility and a further nine articles excluded. Although published within the time frame, data in three of the papers had been gathered prior to 2004 and was considered to be too dated. Three papers were excluded as the primary focus was on service delivery for COPD; the remaining two papers excluded as the focus was on self-management and continuing medical education for COPD management, with nominal reference to spirometry assessment. Figure 2.1 demonstrates the phases of the literature review.

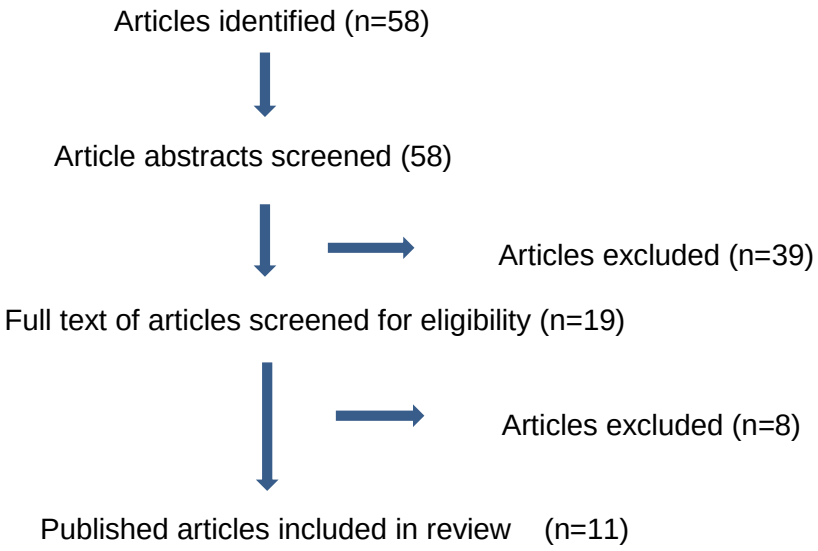


Figure 2.1. Literature Review One

As there was not enough evidence in the first literature search to enable an in depth exploration of the two concepts of confidence and competence, I decided to undertake a second literature review. I wanted to search the literature for the concepts of confidence and competence in greater depth. I also wanted to review any empirical data from other professions to determine whether any empirical data could have any relevance or transferability to practice nursing. The time frame was extended from 2000 to 2015 as I felt the literature was relevant. The search methodology is demonstrated in table 2.2.

Table 2.2. Search Methodology Two

Electronic databases accessed	Applied Social Sciences Index and Abstracts (ASSIA) Cochrane Database of Systematic Reviews Cumulative Index and Allied Literature (CINAHL) Databases of the National Library of Medicine (MEDLINE) OVID SP The British Nursing Index The Joanna Briggs Institute Web of Science
Key words used	practice nurs*, nurs* confidence, competence, profession*, concept, meaning, concept analysis
Timeframe	2000 – 2014
Inclusion criteria	English language articles only Peer reviewed journals
Exclusion Criteria	Non-English language Low quality journals
Back chaining	Back chaining of articles selected from electronic search allowing manual retrieval of books and articles relevant to the topic.
National Publications	Department of Health Publications, NICE, BTS Guidance.

Inclusive of back chaining, eighteen papers were identified. On screening of the article abstracts, five papers were excluded as they were concerned with advanced practice nursing, public health nursing, cultural care, and forensic nursing. The full text of the remaining thirteen articles were screened for eligibility and a further eight articles excluded as they were not transferrable to UK general practice nursing and/or concerned with student nurse training. Figure 2.2 demonstrates the phases of the literature review.

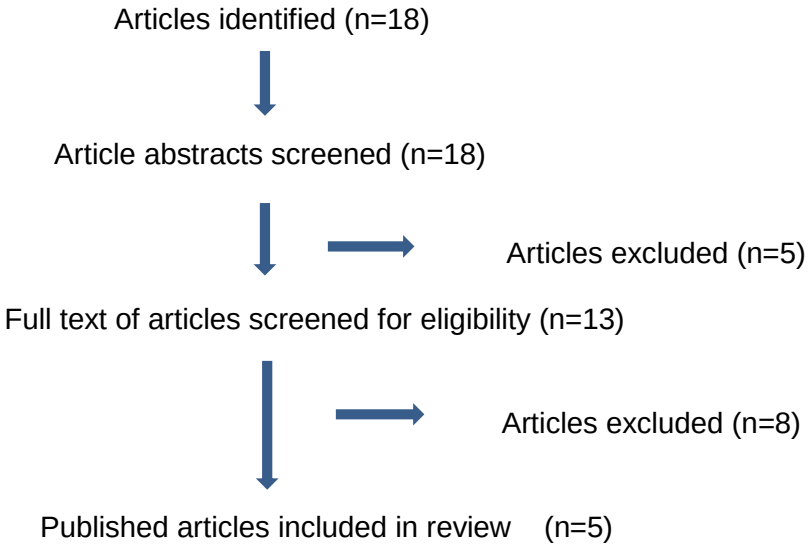


Figure 2.2. Literature Review Two

The literature searches were repeated in September 2015 and the results were virtually identical, culminating in only one publication being added to what had already been gathered in the first literature search. Figure 2.1 was updated accordingly. Most of the articles I already had, and although I did not expect to generate a large volume of relevant literature, the paucity of empirical evidence from the practice nurse perspective again illustrated the lack of voice and highlighted the anomalous hidden practice nurse role in spirometry in clinical practice.

2.3 General Practice Spirometry

On reviewing the empirical data, with the exception of one paper (Joo et al, 2013), the first finding was that all the papers regarding spirometry were published within a time frame of 2005-2009, with data mainly collected from 2003 to 2005. This suggests that certainly regarding the UK data, there was interest in spirometry and primary care for the first two to three years after COPD came onto the primary care agenda in 2004, but little since. Although one paper (Borg et al, 2010) was published in 2010, a version of the paper had been presented at the European Respiratory Society Conference in 2005. Data was therefore old at the time of publication five years later and fell into the time frame of the other papers.

The evidence gap post 2009 is clearly demonstrated. Arguably, the empirical data is potentially out of date and may not reflect the current situation of spirometry provision in general practice. This singularly justifies the need for comparison of my research findings to the empirical

evidence, to determine what changes there have been to spirometry within practice nursing in the past five years.

In addition, only six papers regarding spirometry were UK studies: therefore, empirical evidence from the United States of America and Australia was used to facilitate detailed comparative discussion of themes. Whereas it is entirely appropriate to broadly compare empirical data from other countries to gain a wider picture of spirometry assessment and interpretation, the unique nature of primary care and practice nursing roles within the NHS cannot be assumed to be identical to health care systems external to the UK. Direct comparison is therefore not possible and this has to be acknowledged and contextualised within the critique.

2.3.1 COPD Diagnosis with Spirometric Assessment.

In the absence of spirometry, assessment of symptoms, examination and smoking history has led to physician diagnosis and inclusion on COPD chronic disease registers (Bolton et al, 2005). The aim of the research by Bolton et al (2005), was to assess the impact of spirometry in primary care in Wales. Data were collected during the latter six months of 2003, prior to the launch of the new GMS Contract (BMA and NHS Confederation, 2003) on April 1st, 2004.

A postal questionnaire was sent to the main spirometer user at 371 general practices randomly selected from the 518 in Wales (72%). Questions were asked about the availability of spirometry, confidence in use (including calibration), interpretation of results, the type and length of training and the number of registered COPD patients investigated with spirometry.

The response rate was 61.6% (227 of the 371 practices contacted), with coverage across Wales. The majority of spirometry usage was by practice nurses, with a modest 30% usage by general practitioners. 66% of respondents reported varying degrees of lack of confidence with interpretation of results. Spirometry was performed more often in practices that were confident in its use, compared with those that were less confident ($P<0.001$).

Considerable variation was reported in the time spent on training both in use and interpretation of results, with reported training time ranging from zero hours to an estimated thirty hours, with a median value of four hours of training. The most confident practices reported the greatest amount of training. We identified that there did not appear to be a consistent or identifiable standard with appropriate assessments and review of skills to ensure high quality use and interpretation of spirometry results by any group of health professionals. Bolton et al (2005) reported spirometric confirmation of COPD ranging from 0% to 100%, with a median of 37%,

in 87 clinician respondents (GPs and practice nurses) who reported that they used spirometric confirmation for COPD diagnosis. However, data were collected in 2003 via a self-reported questionnaire: therefore, there was potential for bias in self-reporting. Data were also collected before spirometry formally became part of the primary care agenda for COPD care; therefore, the results have to be contextualised within this time frame, as the study reported that 27 practices out of 160 did not use their spirometer at all. Although there was a high response rate of 61.6% to the questionnaire from 214 general practices, arguably, the paper represents spirometry services within their infancy in Wales.

On publication in 2005, findings were already dated, as many general practices that did not have a spirometer at the point of data collection had purchased one post-2004. However, despite its limitations, the paper is one of few reviewing the use of spirometry within general practice in the UK, and is thus still being cited within the national and international respiratory arena ten years later.

However, later data also reports COPD diagnosis in the absence of spirometric testing, suggesting that spirometry underutilisation for COPD diagnosis was still happening in clinical practice post the GMS Contract (BMA and NHS Confederation, 2003), in 2004. A primary care audit of three North Devon general practices, with spirometry assessment of five hundred and eighty patients on COPD disease registers, reporting that four hundred and twenty two (73%) had correct diagnosis. Of the remaining one hundred and sixty six patients, ninety four had normal spirometry, twenty three patients had a restrictive trace (suggestive of chronic disease other than COPD), and two patients had a missed cardiac disorder. In summary, 23% of the patients had incorrect diagnoses (Jones et al, 2008).

It could be argued that the primary care audit and data collection in 2005 - 2006 (Jones et al, 2008), was undertaken in a time period when spirometry was still a new concept for general practice teams post the GMS Contract (BMA and NHS confederation, 2003). However, a later analysis of the UK General Practice Research Database (Suruki et al, 2010), also reported inaccurate diagnosis of COPD in general practice. An analysis of 19,172 patient records between January 1st 2004 and December 31st 2007 revealed that just 36% of patients with newly diagnosed COPD had had spirometry three months before and twelve months after diagnosis (Suruki et al, 2010). The analysis was dependent on the accuracy of primary care read codes and there was also potential for human error in analysis of the General Practice Research Database. A criterion of spirometric confirmation of COPD between three months before and twelve months after diagnosis was also set: therefore, coding might have been incomplete for new diagnoses of COPD towards the latter part of the data collection in 2007, culminating in false under-reporting. However, the study did illustrate under-usage of

diagnostic spirometry, which in turn subsequently supports the claim of inaccurate disease registers for COPD.

Jones et al (2008), were critical of the inaccurate diagnosis of COPD, resulting in inaccurate disease registers with inadequate monitoring of COPD, missed diagnoses and unnecessary treatments (Jones et al, 2008). Criticism was made of the over prescribing of unnecessary inhaled steroid therapy (recommended in 17%; taken by 60% of the patients), and under usage of short and long acting bronchodilator therapies (indicated in up to 18% of patients but not prescribed).

Walters et al (2008a) conducted a small-scale mixed-methods study exploring the attitudes influencing the diagnosis of COPD by doctors and patients with COPD within a primary care setting in Australia. Sixteen GPs and thirty-two patients with COPD at various stages in the disease trajectory participated in focus group discussion. Practice records were examined and patients underwent spirometry, quality of life and symptom scoring; then iterative content analysis identified themes that were comparative with the quantitative data.

Incorrect diagnoses after spirometry assessment were reported in four out of the fourteen participants who had also been selected for qualitative interviewing. Walters et al (2008a) also reported occurrences of significant inaccurate classification and misclassification of COPD disease severity within clinical records and intentionally delayed physician diagnosis of COPD.

Although the analysis was iterative, the relationship of quantitative data on lung function/quality of life to the qualitative focus group discussion was not clear. The study would have benefitted from a greater explanation of the iterative process, in order for the reader to understand how the themes arose from the data analysis. The GPs had also selected the patients for the trial: therefore, there was potential for selection bias. The study was small-scale yet the authors claimed representativeness of Australian general practice. In addition, the researchers did not identify the entire COPD population, therefore a true representation of COPD within Australian general practice may not have been given.

Poor communication with the patients was also highlighted (Walters et al, 2008a) which was consistent with both the expressed attitudes and clinical practice of the doctors and reports of patient experiences. There were also reported pessimistic physician attitudes to prognosis. A more recent study (Joo et al, 2013) also reported therapeutic nihilism, with outcomes of scepticism about whether spirometry is warranted to diagnose and manage COPD. There was a reported lack of concern about the misdiagnosis of COPD, whether it was over-diagnosis or under-diagnosis. Availability of spirometry was not reported to be a barrier, however, the researchers concluded by recommending that the first step towards increasing the use of

spirometry amongst primary care physicians was to have them believe in its utility in the diagnosis of COPD.

This was a small qualitative study of twelve primary care physicians in America, with data collection via four focus groups, each group consisting of three physicians. Discussion might therefore have been potentially guarded, with high visibility within a small group (Joo et al, 2013). However, as negative views on spirometry and COPD were freely expressed, I would argue that physicians might have felt less constrained within such a small group environment. The primary care physicians were also from the same academic centre, and as a result, their beliefs and attitudes might not have been generalizable to other areas of primary health care.

The researchers also reported that the physicians often viewed COPD as a low priority chronic illness in the context of patients with numerous and more critical co-morbidities (Joo et al, 2013). Halpin et al (2007) reported similar results. Thirty-nine randomly selected GPs were interviewed via telephone and the consistency of COPD diagnosis and treatment pathways was evaluated using a series of patient presentation scenarios. On discussing a case study of a 45-year-old smoker of twenty cigarettes a day, complaining of chest tightness and dyspnoea on exertion, disparities between perceptions and reality were observed, with 49% of GPs favouring cardiac over respiratory diagnosis of COPD (8% GPs). Critically, I would argue that case study interpretation via telephone is challenging and is clearly a limitation to the study, with the absence of any visual aids to support the case study discussion.

A UK study (White et al, 2007) compared accuracy of spirometry performance and interpretation by primary care clinicians and secondary care based respiratory specialists, to assess the feasibility and usefulness of remote specialist reporting of primary care spirometry. Six random general practices with patient list sizes of > 6000 patients participated in the study, with spirometry tests undertaken on a minimum of fifty patients from their COPD registers. Prior to the trial, participants were invited to a two-hour group classroom training session, followed by two individual three-hour clinical tuition sessions with laboratory subjects. The manufacturer of the spirometer also provided a final individual tuition session to each spirometry tester and training in the documentation of results. In total, the six practices carried out 312 tests over three months. Forty-nine tests were excluded as the quality was poor, with spirometry indices or graphical curves missing; however, primary care clinicians and secondary care physicians both reported 212 acceptable tests. No explanation was offered for missing reports other than failed transmission of the tests.

Data analysis reported the quality of spirometry in participating practices to be low, with almost 40% of the competed traces reported by the specialists being unacceptable for accuracy based on international and national criteria. Furthermore, if the original 49 excluded tests were

added to those found to be unacceptable by the secondary care physicians, the overall rate of unacceptable tests increased to 52%. Therefore, the researchers claimed that the patient technically had a 50:50 chance of inadequate spirometry on which diagnoses were being made and treatment given.

The paper is contradictory in its recruitment criteria, initially stating that patients were recruited from COPD registers and then later stating that subjects were patients with a clinical diagnosis of, or clinical suspicion of, COPD. I have interpreted this to mean that the patients who had a clinical suspicion of COPD were on the COPD practice registers, yet the only way for them to be included on COPD disease registers would be if a diagnostic read coding had been entered on the patient records. In addition, as there was a reimbursement of £10 for each spirometric trace undertaken, and practices were asked to provide 50 traces, the study could potentially have been viewed as an income generating activity for patient care, which in turn might have impacted on the quality of the spirometric traces generated (as practices were being paid regardless of quality) and the type of patients selected.

Two of the six practices were undertaking spirometry prior to the study, and therefore potentially had an advantage in providing traces of higher quality, affecting reporting and the study outcomes. Data collection would have been more equitable from either six practices undertaking spirometry or six practices not undertaking spirometry. However, this does confirm my earlier claim that in 2005, spirometry was underused in primary care, despite the financial incentives to provide the service.

The concept of quantity over quality in spirometric testing was replicated in a later study. Strong et al (2009) analysed data from the records of 3,217 patients randomly sampled from 5,649 patients with COPD in thirty-eight general practices in Rotherham, aiming to determine whether high achievement against QOF spirometry indicators was associated with spirometry to BTS national standards (BTS, 1997).

Data was obtained from the records of 3,217 patients, randomly sampled from 5,649 patients with COPD in 38 general practices in Rotherham from October 2006 to February 2007. Severity of airflow obstruction was categorised by FEV_1 (% predicted) according to NICE guidelines (NCGC, 2004). This was compared with clinician recorded COPD severity. The proportion of patients whose spirometry met BTS standards (BTS, 1997) was calculated in each practice using a random sub-sample of 761 patients. The Spearman rank correlation between practice level QOF spirometry achievement and performance against BTS (BTS, 1997) quality achievements was calculated.

Overall, although the thirty-eight Rotherham practices achieved 94.5% (range 42.7% to 100%) of the QOF points available in the COPD domain in 2006-7, at a practice level there was no correlation between quality spirometry (measured by adherence to national standards) and QOF target achievement. Practices were therefore being remunerated for target achievement but quality of spirometry was low. Adherence to national standards (NCGC, 2004) for spirometry was found to range from 74% of cases in one practice to 0% in seven practices, with only 31% (85% CI 27%-35%) of cases meeting the national standard criteria for spirometry. Further, 12% of patients on COPD registers were found to have spirometry readings that did not support the diagnosis of COPD. This supports my earlier assertions that spirometry is commonly misunderstood and misinterpreted in primary care.

The study is not without limitations, as data collection was dependent on a small team of nurses searching paper records by hand and computer records electronically. There was potential for human error and incomplete data collection if paper records were missing and spirometric traces faded. There were also limitations to data collection as random samples of one hundred patients were taken from each practice; however, all patients with COPD were included if there were fewer than a hundred patients at smaller practices. Patients from smaller practices would therefore have been over-represented.

However, I feel that the paper illustrates that the QOF does not measure quality over quantity, and supports my earlier argument that as general practice is being reimbursed for achievement of targets, irrespective of quality there is no incentive to invest in training and staff development for spirometry services, as there is no additional financial reward: thus, a negative spiral of task for financial gain is perpetuated.

In summary, the literature is suggestive of under use of spirometry for diagnosis in general practice, also physician disinterest in COPD as a chronic disease. The empirical data also suggests a lack of understanding of spirometry amongst both GPs and practice nurses in general practice. Further, there are inaccurate diagnoses of COPD leading to inaccurate chronic disease registers for COPD which may result in over or under prescribing and use of appropriate medication for the chronic disease management of COPD. This may also have implications for the safe and accurate chronic disease monitoring and chronic disease management of COPD by practice nurses. However, it has to be acknowledged that the data presented is from seven papers only, therefore hesitancy has to be expressed about conclusions drawn from the empirical data.

2.3.2 The Practice Nurse and Spirometry

The literature, albeit it limited, is suggestive of a picture of physician disinterest, underuse of and inaccurate reporting on spirometric traces for maximum financial gain. However, as previously stated, conclusions are limited due to the small number of papers presented. There is therefore a need to focus on and contextualise the practice nurse working within the general practice team environment, to determine what data does exist on practice nurses and spirometry for chronic disease management of COPD.

Upton et al (2007) conducted a national survey to determine nurse-led UK general practice asthma and COPD care and the training undertaken. Data were collected from February to June 2006, via questionnaires from five hundred randomly selected UK practice nurses undertaking regular asthma and COPD reviews in clinical practice. Seventy-four percent (368/500) of practice nurses reported responses for the COPD section compared to 78% (389/500) for the asthma section. The data therefore suggested that services for both asthma and COPD chronic disease management were on a par within general practice.

Overall, 215 respondents (Upton et al, 2007) reported that they had an advanced role in the care of patients with COPD, defined as autonomous COPD care and diagnosis. However, 111 (52%) had not obtained accredited spirometry training (defined as diploma and degree level modules recognised by a university). There was no further definition of accredited spirometry training, that is, post graduate or post registration training. Fifty of the 111 nurses (45%) reported holding an advanced role but no accredited COPD training, and reported that a GP was not always immediately accessible when they were seeing patients. This was in comparison to the 255 respondents who held an advanced role in the care of patients with asthma. Fifty-one (20%) did not have accredited training, of whom twenty-one (41%) reported that a GP was not always immediately accessible for advice when they were seeing patients.

Interestingly, the proportion of nurses without accredited COPD training was highest in the smallest practices (85%) and decreased as practice list size increased. The training level for asthma did not vary with list size. Upton et al (2007) offer an explanation of smaller practices having difficulty releasing practice nurses for training, with practice nurses working in smaller practices potentially seeing patients without the same level of support from colleagues as is available in larger practices. However, as lack of GP support has been highlighted, this is also suggestive of lack of practice nurse peer support in smaller practices.

As data were collected between February and June 2006, the researchers acknowledge that the low level of accredited COPD training, in comparison to widely available accredited asthma training, was probably as a result of COPD training being new to primary care within the

previous decade. The paper also reported that practice nurses were working unsupervised and making clinical decisions for which they were not trained. This raises issues of competency and confidence in clinical practice, as White et al (2007) reported poor quality spirometric traces and very low quality interpretation, even after training.

The paper by Upton et al (2007) can be criticised for its method of data collection, which was not via anonymised questionnaires. Practice nurses might therefore have potentially falsely reported responses, which might have affected data outcomes, as the researchers intensively followed up non-respondents by telephone contact. However, I feel that the paper does highlight potential issues related to lack of training, supervision and knowledge, which are issues that I intend to explore further in my research.

So does spirometry training make any difference? Borg et al (2010) reported that spirometry training does not guarantee valid results. However the paper (Borg et al, 2010) is a small study, and although published in 2010, was first presented in 2005. Data was therefore dated and potentially out of date when published. Fifteen nurses and physiotherapists from rural health facilities in Australia undertook a fourteen-hour spirometry course and were subject to on-site reviews at five, seven and nine months after the initial training course. Participants were assessed for adherence to American Thoracic Society (ATS) acceptability criteria in undertaking an assessment of spirometry on a naive subject (a patient who had not been assessed with spirometry previously, therefore was new to the procedure), and a retrospective review of a selection of spirometry results at each visit. Further education was provided after the five-month and seven-month visits.

The study reported adherence to ATS criteria was poor, five months after the fourteen-hour training session; with only 40% of clinicians meeting the criteria for acceptability. The acceptability criteria increased to 67% at seven months, and then to 87% at nine months. The retrospective review of results confirmed that 37%, 60% and 58% of the tests at five, seven and nine months retrospectively met the ATS criteria. The authors concluded by stating that the fourteen-hour spirometry training course alone did not provide adequate skills and knowledge to correctly inform spirometry to ATS criteria five months after training, although competency did improve with follow-up training.

The study can be criticised for not providing all participants with the same spirometric equipment. One site used a hand-held portable spirometer that was not able to display both volume-time and flow-volume curves to determine the accuracy and acceptability of the trace. The users were therefore at a disadvantage from the start of the study, which I feel was a significant barrier to their working towards providing accurate, high-quality spirometric traces.

In addition, although a maximum of ten spirometric traces were retrospectively reviewed at each site, the authors reported a low overall number of spirometry tests undertaken. Participants reported barriers to testing as: lack of support in the workplace, time allocated for testing, and having multiple roles within the workplace. Within the UK, the community physiotherapist does not commonly undertake spirometry assessment: therefore, results cannot be directly comparable to practice nurses within the UK. However, it is my intention to use the reported barriers as a baseline for comparison with my data, as I consider them to be the only significant non-medically reported barriers to spirometric testing within the literature.

On comparing models of spirometry delivery in a target group at risk of COPD in a mixed urban/rural population in Australia, one mixed methods study (Walters et al, 2008b) concluded that opportunistic spirometric testing by visiting trained nurses (TN) substantially improved and increased spirometry performance. This was in comparison to the usual care (UC) of in-house, as-needed spirometric assessment by practice nurses and GPs.

In the trained nurse model (TN), nurses trained in spirometry assessment visited each practice for two three-hour sessions per week to perform opportunistic spirometric testing on invited patients in a defined target group of smokers and ex-smokers over thirty-five years of age. Spirometry was also advertised via posters or performed at GP request. Spirometric traces (lacking interpretation) were faxed to GPs within 48 hours. In the usual care model (UC), a spirometer was provided to the practice with education and a two-hour training session was provided. Spirometry was undertaken by a GP/practice nurse or practice assistant according to the usual practice protocol. Practice publicity was discretionary (via computer-generated reminders and waiting room posters). Spirometric traces were retained for interpretation and financial reimbursement was given for traces within the target group. For this study, the same spirometers were used in each model of delivery. However, the study can be criticised for not providing any information on the extent of training or experience of the trained nurses prior to the study.

A total of 531/904 (59%) patients underwent spirometry in the TN model and 87/1130 (8%) patients in the UC model ($p<0.0001$). ATS spirometry standards for acceptability and reproducibility were met by 76% and 44% of tests in the TN and UC models respectively ($p<0.0001$). This was no surprise, as arguably, TNs were more skilled in comparison to the UC model, which consisted of a range of professionals with minimal training. Skills and knowledge would automatically be more diverse: therefore, I would criticise the two sets of professionals as not directly comparable. It is interesting, however, that although the emphasis was on the TN model providing spirometric traces of higher quality, 24% of the traces were not of good quality. This demonstrates just how difficult a procedure spirometry is in clinical

practice and supports the conclusion by Borg et al (2010) that training alone will not guarantee quality spirometric traces.

Spirometry performed by practice nurses in both models resulted in increased GP diagnosis of COPD (Walters et al, 2008b). Critically, although the GPs expressed the need for appropriate reimbursement for spirometry and the necessity of achieving high quality results, the trial can be criticised for its apparent lack of assessment of the quality of GP interpretation of the spirometric traces, resulting in the new diagnoses. However, it may be that the need for financial reimbursement had been identified as an income-generating mechanism for primary care, as reimbursement for spirometry had been introduced into the study. However, as the data have demonstrated, financial reimbursement has no parallels with the quality of spirometry (Strong et al, 2009) and is no guarantee of high quality spirometry.

Paradoxically, there was also consensus amongst the GPs that the nature of GPs' work was not compatible with performing spirometry to consistently high standards, but that this could be achieved by practice nurses (Walters et al, 2008b). This infers that GP's indicated that they were willing to delegate the work of spirometry assessment to practice nurses, and that there was an assumption that practice nurses would be able to undertake spirometry assessment competently.

2.4 Competence and Confidence

The literature suggests untrained practice nurses work in isolation (Upton et al, 2007), to deliver COPD care using spirometry, yet paradoxically the literature reports that general practice is achieving spirometry targets and being successfully remunerated for target achievement, irrespective of the quality of the spirometry in clinical practice (Strong et al, 2009). An important concept in the quality of assessment is the competence and confidence of assessors which will be discussed and critiqued. Practice nurses may be confidently undertaking spirometry assessment and meeting targets for remuneration, but may demonstrate lack of competency in the procedure and interpretation, even after training (White et al, 2007; Borg et al, 2010; Walters et al 2008b; Strong et al, 2009).

Confidence is a commonly used phrase, with self-reporting of confidence levels frequently used in empirical research to create theoretical assumptions on the ability of various professional groups to perform clinical skills such as spirometry assessment and interpretation (Bolton et al, 2005; Halpin et al, 2007). However, the literature search identified a gap in the definition and concept of professional confidence in clinical practice. There was an assumption that all clinicians understood the concept of confidence, but critically, I would argue that the

subjectivity of confidence is not acknowledged in the papers by Bolton et al (2005) and Halpin et al (2007).

Critically the definition and concept of confidence is equally as important as that of competence, therefore is needed as a framework to contextualise practice nurses' views on confidence with spirometry assessment and interpretation. I therefore undertook an additional search of the same electronic databases using the words "meaning", "concept", and "professional confidence" (table 2.2) in an attempt to find a definition of, and gain a greater understanding of, the concept of confidence in clinical practice.

Holland et al (2012) undertook a theoretical thematic analysis examining the attributes of, antecedents for, and consequences of professional confidence. The data was then synthesised and refined into a cohesive and comprehensive description. Confidence was defined as an internal feeling of self-assurance and comfort, as well as being tested and/or being reaffirmed by other nurses, patients and friends. The concept of professional confidence was then defined as:

> An understanding and a belief in the role, scope of practice, and significance of the profession, and is based on their capacity to competently fulfil these expectations, fostered through a process of affirming experiences (Holland et al, 2012: p. 214)

The concept analysis was undertaken with specific reference to occupational therapy students, but I feel that it is transferrable to practice nursing. A criticism can be made regarding author subjectivity and consensus, as concepts are constantly subject to change and the definition is not definitive. However, I feel that the concept of professional confidence has been given greater clarity, and from this, an understanding of the association between confidence and competence.

A focused review of the literature in 2005 (Cowan et al, 2005) was critical in that the application of competence to nursing was controversial, with little consensus on the definition of what competence actually was. The literature review acknowledged that nursing required complex combinations of knowledge, performance, skills and attitudes, recommending a holistic definition of competence to be agreed on and utilised in clinical practice. Only then could a holistic definition be used to underpin the development of competency standards and the tools required for the assessment of such standards. The literature search was from 1995 onwards, and was contextualised to a time period before undergraduate training for nursing. My major criticism, however, is the emphasis on the holistic definition of competence, defined as:

> The incorporating of professional judgement in the bringing together of disparate attributes and tasks required for intelligent performance in specific situations (Cowan et al, 2005: p.361)

It is questionable how an isolated practitioner, lacking practice and peer support, is capable of "intelligent performance" (which I have interpreted to be possibly a "knowing performance"), and able to judge what they know, what they should know, and what they do not know, working within the primary care environment. Garbett (2003), on exploring early childhood teachers' confidence and competence, also came to the same conclusion, discussing the position of a teacher who was unaware of their own misconceptions in not being able to provide children with appropriate explanations that would allow them to develop accurate understandings.

Garbett (2003) surveyed one hundred first year undergraduate teaching students to determine confidence and competence across a wide range of subjects. A 56% response rate to a questionnaire also provided details of gender and educational achievement in each subject area. Confidence and competence were self-ranked on Likert scales in applying subject knowledge to teaching practice. All respondents were female and the results reported that the cohort had poor background knowledge in science, with only 15% of participants reporting educational achievement in science subjects. Overwhelmingly, perceptions of self-knowledge of science were at variance with actual knowledge, with the majority of the students having a limited understanding of science concepts and not knowing what they did not know. Naivety towards science subjects was also reported. Interestingly, all the students scored significantly higher on subjects within the school curriculum that were positioned as "traditionally feminine" – that is, the arts and English – rather than "traditionally masculine" subjects such as mathematics and science. This concept of feminisation will be explored later within this thesis.

The study does have limitations in that it is a small-scale study and potentially not generalisable to the teaching population as a whole. In addition, fifteen nationalities were represented: therefore, educational backgrounds were diverse, and arguably, within such a small study, not representative of student teachers as a whole. There was limited reporting of statistical analysis, and it was not stated how the data were analysed. Although data collection was initially quantitative, a qualitative element was then introduced: therefore, the methodology was unclear. However, the study conclusion that negative attitudes, misunderstandings and misconceptions can limit ability and willingness to create quality teaching and learning opportunities can be generalisable to the practice nursing profession. Pertinently, the conclusion is also highly applicable to the primary care team in the learning of a new clinical skill of spirometry assessment for chronic disease management of an unfashionable and unpopular chronic disease.

Refocusing on confidence and competence with spirometry, Bolton et al (2005) reported confidence in spirometry usage and interpretation amongst practice nurses and GPs immediately before the contractual changes to primary care in 2004. The majority of spirometry use was by practice nurses (70%), and of the 160 general practices performing spirometry, 93 (58.1%) were confident using the spirometer, while the remainder reported less confidence. Although the ratio of practice nurses to GPs completing the questionnaire is not reported, the study found that spirometry was performed more often in practices that were confident in its use compared with those with less confidence ($p< 0.001$).

Critically, the relevance of reporting confidence in isolation from parallel assessment of competence is questionable, as self-reported confidence arguably cannot be attributed to or associated with competence in clinical practice. Similar criticisms can be made regarding the study by Halpin et al (2007), which aimed to report confidence and understanding in the diagnosis and management of COPD. Sixty practice nurses and forty-six GPs were interviewed via telephone in 2005. Practice nurses reported contradictory statements, with 55% reporting that they were confident in diagnosing COPD, then later 70% of practice nurses reporting that they were confident/very confident about differentiating asthma from COPD. Theoretically, the percentages reported should be similar, as the same level of competency is needed for interpretation of all spirometric traces. Arguably, practice nurses may have under- or over-reported confidence, which might possibly have been associated with the method of data collection. However, the results clearly suggested that again, self-reported confidence is not related to competence.

Davis et al (2005) surveyed 165 junior doctors' growth in confidence in different physician roles via questionnaire in Denmark. A 56% response rate was given, with the greatest reported responses being from 56 senior house officers who had been qualified for a year. This was interesting from the self-reporting perspective, as junior and senior doctors' self-reporting was lower. This raises potential issues on the self-reporting of confidence in clinical practice for fear of being shown to have lack of confidence in clinical skills.

Davis et al (2005) concluded by suggesting that growth of confidence in physician roles proceeds at different rates during postgraduate training, with different learning curves for different roles. The study has limitations in terms of its transferability to the UK health system. It can also be criticised for its sole focus on confidence, then abruptly introducing competence and using the terms "confidence" and "competence" synonymously towards the latter part of the discussion. However, the study conclusions are interesting and are transferrable to practice nursing, as different learning needs for the different roles within professions were highlighted.

Stewart et al (2000) undertook a small-scale qualitative study that explored the terms “confidence” and “competence” at three stages throughout the pre-registration year of four pre-registration house officers. Competence and confidence were assessed against a self-evaluation instrument, consisting of the tasks and skills which educational supervisors believed were needed to make up the pre-registration job. They clearly defined competence as what individuals knew about their ability based on their previous experience of the task. Confidence was defined as a judgement which influenced whether an individual was willing to take risk in an activity.

Although the study can be criticised for being very small, it is generalisable to the practice nurse role, as many of the core tasks assessed for competency and confidence were similar, such as clinical assessment, history taking, and multidisciplinary team liaison. The study discussed dangers arising from overconfidence, with junior doctors performing tasks that they are not adequately equipped to undertake, thereby not evaluating risk. In addition, they concluded that junior doctors lacking confidence would infer that these doctors were unable to work independently, and that confidence must be tempered with knowledge of their personal limitations, weakness and competence in order to avoid critical situations occurring.

The self-evaluation instrument was key to this study, and was used effectively as a benchmark tool for self-evaluation of confidence and competence. However, critically, the complicated nature of self-assessment is subjective and heavily influenced by the values and beliefs the individual holds. In addition, to be of maximum effectiveness, a self-assessment tool would have to be updated on a continuous basis to reflect the rapid pace of change to practice nursing roles within primary care. Evaluation of the reported self-assessment of competence and confidence would also be a major challenge, as the literature has clearly reported a fragmented picture of training and limited knowledge of the procedure (Borg et al, 2010; White et al, 2007; Upton et al, 2007). Stewart et al (2000) reported that although their study was small in scale, over a hundred hours of analysis were involved. This is impractical and, arguably, cannot be transferred to primary care. However, Stewart et al (2000) did conclude by stating that confidence and confidence should not be used synonymously, as the two concepts have a symbiotic relationship. There is therefore clearly a need to research these concepts further, as although there are two references to practice nurses and confidence relating to the spirometry procedure within the literature (Bolton et al, 2005; Halpin et al, 2007) on closer review, critically, the data is meaningless in that self-reporting of confidence is invalid in the absence of the assessment of competence.

The literature search has demonstrated that there has been little exploration and analysis of the concepts of confidence and competence within nursing, apart from the literature review

presented by Cowan et al (2005), which is dated and has little relevance to practice nursing. This is in contrast to the professions of teaching and medicine, where the concepts of the relationships of confidence to competence seem to be more advanced and more fully explored. There is clearly a need to research what understanding practice nurses have of the concepts of confidence and competence within my data collection, to determine whether or not they impact on spirometry assessment and interpretation in clinical practice.

2.5 Summary of Chapter Two

In summary, data reports COPD diagnosis in the absence of spirometric testing, suggesting that spirometry underutilisation for COPD diagnosis is still happening in clinical practice post the GMS Contract (BMA and NHS Confederation, 2003). Reported physician disinterest and poor quality spirometry have potentially contributed to a lack of understanding of the chronic disease care of COPD care. This has in turn, has possibly impacted on the role of the practice nurse in developing chronic disease services for COPD in the UK. However, as the literature review has been based on a small number of papers, conclusions cannot confidently be reached, with suggestions only being made.

Training is a key issue, with the literature suggesting a fragmented picture of ad hoc, variable training for practice nurses, with training not guaranteeing proficiency in spirometry assessment or interpretation. As there is so little literature on spirometry and practice nurses, and practice nurses are now providing the majority of care for the chronic disease management of COPD, the knowledge gap has been demonstrated, yet on a small scale only due to the limited available literature. There are no empirical studies assessing practice nurses' views on COPD care and use of spirometry. This would be an interesting subject to research in the future from the nursing perspective, for comparison with the studies on physicians' attitudes to COPD and spirometry.

Self-reported confidence in undertaking the spirometric procedure has been utilised as an outcome measure for data collection, however the literature identified a gap in the definition and concept of professional confidence in clinical practice. There was an assumption that all clinicians understood the concept of confidence, but the literature has demonstrated the subjectivity of confidence reporting with disparity between the concepts of confidence and competence in clinical practice.

Finally, the critical aspects of the relationship between confidence and competence within nursing appear to be comparable to other professions such as medicine and teaching, albeit

the empirical data is limited and the studies small scale and dated. However the concepts of the relationships of confidence to competence seem to be more advanced and more fully explored within other professions and a need to further explore confidence and competence within nursing has been highlighted. .

The following chapter will introduce the reader to the theoretical considerations underpinning the research.

Chapter 3 Theoretical Considerations

Chapter Three will introduce the reader to the theoretical and methodological considerations pertaining to the project and justify the methodological framework of choice. The aim of the chapter is to build upon the ontological, epistemological and axiological discussion which was introduced in chapter one and further locate the thesis within the wider theoretical domain.

3.1 Theoretical Frameworks

I wondered if it was what Davies (1995) described as the "patriarchal general practice environment" (p.49) which was a key issue as to why practice nurses were not progressing with spirometry assessment and interpretation in general practice. I felt that to develop spirometry services within primary care in the long term, the only way to understand these agendas was to determine the challenges practice nurses faced and ultimately give practice nurses their voice. My motivations for the research were thus:

- social: in positioning myself within a rapidly developing practice nursing environment in order to gain an in-depth understanding of the challenges and barriers to accurate spirometry assessment in primary care;
- emotional: in overcoming professional frustration at the slow progress with COPD service provision in primary care;
- clinical experience: immersed within the practice nursing culture, my experience in understanding the practice nursing role before and after the introduction of the GMS Contract (BMA and NHS Confederation, 2003) would aim to empower practice nurses in the long term and develop theories that would ultimately contribute to clinical expertise in the management of spirometry assessment and interpretation in the long-term care of patients with COPD.

Davies, (1995, p. 44), states how organisations must be seen as "social constructions" that arise from a masculine version of the world and that call on masculinity for their legitimisation and affirmation. As nursing is highly gendered, being predominantly female and consisting of up to 95% female to male gender (Sandelowski, 2000; Spratley et al, 2000; Ramvi and Davies, 2010), the concept of gender, that is practice nurses working within the masculine organisation of general practice, became an overriding concept.

Parken et al (2014) on reporting the gendered occupations in Wales, discuss the gendering of occupations. Associate Professional and Technical (APT) jobs being presented as the largest of the major nine occupational groupings representing 14% of all jobs in Wales (Parken et al, 2014). Nursing is described as by far the single largest APT occupation, constituting 15% of all ATP jobs and accounting for 28% of all women's work in ATP. Without nursing, the occupational group would be dominated by men. Other examples of ATP occupational groups including laboratory technicians, medical and dental technicians, artists, actors and journalists.

In addition, the largest pay gap within the nine major occupational groupings, is reported within the APT occupations with 32% of women working part-time in comparison to 8% of men (Parken et al, 2014). Nursing as a profession within Wales is therefore highly gendered. In 2015, a survey of 3,400 UK general practice nurses reported that men are under-represented in the profession, comprising only 2.0% of the general practice nurse workforce (QNI, 2016). Male practice nurses are even more under-represented within my University Health Board (UHB). I was unable to prove this from my sample but I was aware from the outset there were no male practice nurses employed within general practice.

Critical discourse analysis was originally intended to be the methodological framework of choice for my study, the concept of the role of language relating to ideology and socio-cultural change being relevant and applicable to the current social positioning of practice nurses within general practice. I also identified with Foucault's (1977) representation of discourse as a vehicle for the exercise of power through the construction of disciplinary practices and individual subjectivity. This, again, is relevant to the role of the practice nurse, who is uniquely employed within individual general practices, and therefore has an individual professional role developed according to "business need" as an income generator. Analysis of the operation of rules and procedures, enabling the construction of disciplinary practices and of the self-disciplining subject (Foucault, 1977), were relevant concepts that could be utilised as a methodological framework to discursively review power influences serving as barriers to accurate spirometry assessment and interpretation for practice nurses.

Reed (2000) describes discourse as a "generative mechanism" with critical realism as a primary epistemological standpoint, arguing that discourses should be examined in relation to social structures, including the power relationships that are responsible for occasioning them. I identified with the "generative mechanism" concept and initially felt that critical discourse analysis was a relevant, applicable methodological framework.

However, as the research project developed, I was repeatedly drawn to the concept of gender as a factor in the socialisation of practice nurses working within the primary care environment. This seemed to have greater relevance than critical discourse analysis as a methodological

framework as I began to see practice nursing as a feminist issue by virtue of employment practices and being female dominated. This, for me, was a new concept yet I felt that I could not separate the apparent lack of the practice nurse voice within the empirical data from the concept of the influence of the gendered organisation.

Following discussion with my supervisors, I then changed the methodological framework and reviewed the concepts fundamental to feminist theory as a means of understanding and explaining my research findings. From the outset however, it is important to state that this doctoral research does not claim to be a feminist study: instead, it is a study that is *informed* by some of the key feminist principles. Letherby (2004), describes how methods should be chosen to suit projects and not the other way round, and I feel that this is what happened to me.

Ackerly and True (2010) argue that a critical feminist perspective is expressed through a feminist research ethic that guides research decisions and helps the researcher reflect on and attend to the dynamics of power, knowledge, relationships, and context throughout the research process. Reinharz (1992) describes several defining principles of feminist research: the double dimension of constructing new knowledge and the production of social change; the focus on the meanings women give to their world while recognising that research must often be conducted within institutions that are still patriarchal; and that feminist research is characterised by interdisciplinary and transdisciplinary diversity. As a female practice nurse researching other female practice nurses within the nursing profession (with specific reference to the management of a "hidden disease"), moreover a profession that seemed to be marginalised, disempowered and to have little voice within the literature, feminist theory as a methodological framework for the study seemed relevant and pertinent to the politicised environment of primary care.

A core feminist belief is that research should empower the women involved (Reinharz, 1992). Self-reflexivity within feminist research inevitably changing the researcher, sometimes painfully, sometimes in exciting, sustaining ways (Gatenby and Humphries 2000). I recognised that it was impossible to not be reflexive as my beliefs, experiences of general practice nursing, and feelings are part of the process of knowledge construction (Lynch, 2000; Hesse-Biber, 2007a). A reflexive diary was therefore kept, with reflexive notes woven into the study to illustrate how feminism informed my thinking throughout the research process.

Walby (2011) states that there are multiple feminisms and multiple sociologies, rather than a single feminist orthodoxy. Mies (2000) concurs, and is critical of the sheltered world of academia in its attempts to reduce feminist research to ivory towers of pure academia, arguing that it is participation in social processes and reflection about them that will orient the

processes of praxis towards progressive emancipation and humanization. On studying multiple concepts of feminist theory, I was able to identify and relate to the broad definition of feminism as the goal of improving the position of women, or more ambitiously as having the aim of transforming gender relations and existing gender standards (Walby, 2011).

I had identified my philosophical status early on in the research process and I reviewed it again after changing the methodological framework. Critically, my philosophical stance seemed to be more aligned to feminist principles of gender, oppression, power and relationships (Ackerley and True, 2010). This provoked a great deal of reflective thought as I had not identified my epistemological beliefs at the beginning of the research process as those aligned with feminist theory. I had briefly studied Women's Studies in the late 1980's and had not enjoyed the experience. On reflection, this had subconsciously influenced the choosing of a methodological framework that was not aligned to my epistemological stance.

I was therefore keen to study and learn more about feminist theory, and apply feminist principles to my methodological framework. As previously stated, I wanted to undertake a study informed by feminism. My aim being to gain a greater understanding of my professional role situated within the research process as a participant researcher, represent the diversity within practice nursing and to the best of my ability promote self-empowerment of practice nurses in the future chronic disease management for COPD. I also wanted to distribute my research findings to promote self-empowerment of others, and contribute to the development of the future practice nursing knowledge base for spirometry assessment and interpretation.

3.2 Feminist Methodology, Epistemology and Nursing

Methodology, according to Ramazanoglu (2002) comprises of rules that specify how an investigation should be approached and Landman (2006) tells us that it sets out the theoretical framework that will inform the research process. Letherby (2004: p.175) states that the central concern of feminist researchers is the relationship between the process and product that is; between "doing" and "knowing" in contemporary feminist research. Further, acknowledgement of and reference to the power dynamics in research is also a central concern of feminist researchers (Letherby, 2004). In comparison to traditional research, feminist methodology therefore seeks to remove the power imbalance between researcher and subject.

Within the feminist literature, there has been debate as to whether there is a distinctively feminist epistemology, and hence methodology, for feminist research (Delamont, 2003; Oakley, 2005). The primary debate is the claim that women's direct experience or standpoint

should be treated as the basis for feminist knowledge. The core assumption is that knowledge does not exist outside of the social world: there is no view from "nowhere." Instead, all knowledge contains a perspective (Hesse-Biber, 2010). I identify with this I believe my perceptions of practice nurses and spirometry have arisen from cultural and social factors that are the unique nature of general practice nursing and the environments in which the practice nurses work in.

Cook and Fonow (1990) describe five basic epistemological principles in feminist methodology. They are: the taking of women and gender as the focus of analysis; the importance of consciousness raising; the rejection of subject and object (that is, valuing the participants' knowledge as being expert knowledge and acknowledging how research valued as "objective" always reflects a specific and social standpoint); a concern with ethics (throughout the research process and in the use of research results); and an intention to empower women and change power relations and inequality.

Landman (2006) claims that feminist epistemology is often overlooked or judged to be inferior and trivial; however, a feminist standpoint can reveal the existence of forms of human relationships which may not be visible from the position of the "ruling gender" (Maynard, 1994: p. 19). Ramazanoglou (2002) further discusses feminist standpoint theories as explorations of difficulties of establishing relationships between knowledge and power, focusing on the recognition of the diversity of women's experiences and the interconnected power relationships between women, whilst acknowledging that knowledge is always partial.

Nursing, as previously stated, is a profession that is not gender neutral (QNI, 2016), but one that is highly gendered. Oakley (1993) described nursing as a skill set of what women are legitimised to learn, and later recommended that nursing lose its association with femaleness in order for nurses to achieve full professional status. Davies (1995) develops the concept further, describing nursing as the activity that enables medicine to present itself as a masculine/rational and to gain the power and privilege of doing so. Ramvi and Davies (2010: p. 447) are also critical of nursing for being conditioned by social values of what constitutes "women's work", resulting in the modern-day low status associated with nursing, and that of nursing as a semi-profession or adjunct to a gendered concept of profession (Brennan, 2005; Davies, 1995). Ironically, the final argument is that the "masculinist vision" (Davies, 1995, p.62), cannot be sustained without the work that women do.

Harding (1987) argues that a committed feminist exploration of experiences of oppression via a feminist standpoint is needed to produce a complete and less distorted view of women's lives than produced by men. This epistemological viewpoint focuses on who can be agents of knowledge, what can be known and how knowledge is validated, and the ontological

relationship between knowing and being (Landman, 2006). This is relevant to practice nursing; where, as the literature review has demonstrated, there is little research on practice nurses by practice nurses themselves.

Harding (1987) describes how traditional epistemologies, intentionally or unintentionally, systematically exclude the possibility that women have been "knowers" or agents of knowledge. As practice nurses have been historically "conditioned" to undertake tasks and develop services in response to legislative change and GP directives, the concept of "women's work (Ramvi and Davies, 2010: p.447) is highly relevant. Schultz and Meleis (2007) define nursing epistemology as the study of knowledge shared among members of the discipline, the patterns of knowing and knowledge that develops from them, and the criteria for accepting knowledge claims. Arguably, practice nurses have been excluded from the inception of the role of being agents of knowledge (Harding, 1987), and it is the adoption of an adapted medical epistemology that has subsequently resulted in practice nurses systematically struggling for recognition from the wider nursing profession.

Mies (2000) states that women cannot appropriate their own history unless they begin to collectivise their own experiences. Vinson (2000), on considering the epistemology of modern-day nursing with the competencies required to effectively "nurse", supports Mies (2000), by demanding an examination of how and where students acquire clinical, conceptual, and empirical knowledge. Arguably, the failure of practice nursing, as an under-researched branch of nursing, to "collectivise" experiences, and subsequently to have its own epistemological knowledge, has resulted in hidden power imbalances and tensions within the wider nursing profession.

Stanley and Wise (1993) state that epistemology is fundamental for feminism, for it is around the constitution of a feminist epistemology that feminism can most far-reachingly challenge non-feminist frameworks and ways of working. As general practice is paternalistic and therefore highly gendered, integration of my relationship as researcher into the researched relationship with practice nurses is key, in addition to analysis of emotion engendered from the research process.

Stanley and Wise (1993: p. 189) also describe key feminist epistemological issues of the "intellectual autobiography" of researchers in the process of reaching understanding and conclusions, with recognition of the existence and management of the different realities or versions held of the researchers and the researched. Issues surrounding authority and power in research are also core. This is later discussed by Ackerly and True (2010), who state that the attentiveness to the power of epistemology, to boundaries and marginalisation of people

and ideas, and to the situatedness of the researcher are key concepts of critical feminist theory that support a self-reflective methodology for research.

I felt that my intellectual autobiography could contribute a great deal to the research, with feminist epistemology providing a framework on which to examine my role as researcher objectively and subjectively. As a practice nurse researching other practice nurses, I consider myself to be in a privileged and unique position to be an "agent of knowing" and to explore the relationship between "knowing and being". Reason (1994: p. 328) describes the purpose of feminist research as being to produce knowledge and action that is directly useful to a group of people, and to empower people through a deep level through the process of deconstructing and using their own language.

However, it could be said that my role within the research is not neutral: therefore, I clearly have potential to bias the research outcomes. Fals-Borda and Rahman (1991) describe how the co-option of participatory methods by the elite and powerful serves as a purpose of increasing their power. However, I would argue that I do not consider myself to be powerful or elite. As a practice nurse researching practice nurses, I cannot be neutral or unemotional with involvement and my aim was to be reflexive and explicit about my participation within the research and to construct knowledge, raise self-awareness and ultimately emancipate and increase the power of practice nurses. Stanley and Wise (1993: p. 200) describe "a morally responsible epistemology", which recognises that the "objects" of research are subjects in their own right. I support this concept and felt that I could uphold the "morally responsible epistemology", and represent the practice nurse voice to the best of my ability without bias.

Reason (1994) describes the process of empowerment with construction and own language as consciousness-raising or praxis, with the linking of participant and researcher in a simultaneous process of discovery and action. Fals-Borda (1991) describes dialogue as central to participatory action within feminist research. I would state that it is my ability to "speak and understand" the practice nurse language that facilitated collaboration, data collection, development of the research and ultimately consciousness-raising in colleagues.

However, it was on studying the feminist epistemology that I first began to question my role as researcher, with the responsibility in representing and giving voice to the researched, and also my potential for harm in the research process. A major concern for me, given my awareness of practice nurses' past resistance to change, was that praxis might not be achieved and indeed it might even be resisted, which could ultimately be detrimental to the practice nurse. In fact, the more I read about feminist epistemology, the more I doubted my ability to undertake a research project with feminist methodology as a framework. Another

potential for harm was my situation within the research as researcher, and also as a practice nurse by profession, as there was potential for me to not achieve praxis either.

My primary concern was the growing realisation of an acknowledgement of an alteration in inner feelings towards my future role as a practice nurse within the medically dominated environment of general practice. I had already experienced one profound change in my views and situatedness towards working within general practice earlier in the Doctorate course. This had arisen during the "Advancing Professional Nursing" module, when writing a discourse analysis on practice nurses, GPs and the GMS Contract (BMA and NHS Confederation, 2003). The module, early on in the Doctorate, had changed my views on working within general practice in a completely unanticipated way, and I recognise now that I have since used the essay as a framework for several other essays throughout the Doctorate course and therefore carried on developing themes and concepts about the role of the practice nurse in general practice.

Utilisation of a feminist methodology, with an awareness of feminist epistemology, was another step forward in my academic development and I had to reflect on the further potential impact on me clinically. I have previously mentioned the professional and academic conflict I had encountered already when writing the research aims and outcomes, but this was a key turning point in decision-making, with academic development at a potential risk of professional harm. Kirsch (1999) described how the goal of situating oneself in the work and acknowledging one's limited perspective is to reveal to the readers how the research agenda, political commitments and personal motivations shape our observations made in the field, the conclusions we draw, and the research reports we write. I recognised that I was going through an active process of change and as a result had a heightened awareness of tensions between my dual roles of clinician and researcher. After reflection, I came to the conclusion that I had to continue to progress the research, and that the academic and professional tensions needed to be acknowledged, reflected upon and managed positively. I had developed academically and also clinically to the point where I had no choice but to move forward, as there had been parallel personal and professional development in academic and professional confidence, and social reality is in fact often contradictory by nature.

I identified closely with Reinharz (1992: p.74), who noted the crucial link between feminist research and activism:

> the purpose of feminist research must be to create new relationships, better laws, and improved institutions

It is the emphasis on the improved institutions that I most closely identified with. As a clinician, I feel so strongly about the current poor service provision for COPD care that I feel my passion

and commitment for future improving COPD services in the community actually helped me to refocus on the research and helped to contextualise feminist epistemology and the choice of feminism as a methodological framework for the research.

It is noteworthy that the nature of COPD, as a hidden, silent "Cinderella disease" of respiratory medicine (Bellamy and Booker, 2008: p.5), forms a discursive parallel to the oppressed practice nurse within the nursing profession and primary care. I would argue that the association between the "silent" voice of the oppressed practice nurse and researching the "silent disease" is emotive, and it is this association to me that made obvious the right methodological choice. My aspirations were therefore twofold: engaging critically within the research in applying "the power of feminist theory" (Letherby, 2004: p.185), in effecting change by empowering practice nurses, and distributing information to raise the profile of the "silent disease" of COPD, ultimately raising standards of care for chronic disease management within general practice.

3.3 Paradigms

The concept of a prior knowledge claim is one of several key characteristics of paradigms for social enquiry, with a paradigm incorporating suppositions about social reality and about whether regularities in the social world are uncovered or constructed by inquirers (Phillips, 2006). Within feminist research, historically the debate has been about whether qualitative (interpretivist) or quantitative (positivist) methods are the best way to find out about people's lives, with the historical prioritisation of interpretivist qualitative in-depth interviews (Walby 2011).

However, Letherby (2004) argues that the particular method is not relevant: it is the power within research relationships that should take priority over the method, which should be appropriate to the research question. Kelly et al (1994) are in agreement, stating that there should be no primacy of method and methods should be chosen with reference to the relevance of the questions, the issue and the research goals. Therefore, it has been suggested that no method is intrinsically feminist; rather, it is the particular ways in which methods are used that is the critical issue (Millen, 1997; Kelly et al, 1994; Stanley and Wise, 1993).

On consideration of a positivist (quantitative) versus an interpretivist (qualitative) paradigm, I wanted to adopt a research approach that would achieve maximum data collection to facilitate an in-depth exploration of professional nursing practice, as well as the context within which

practice is conducted. Each paradigm was considered to determine the most effective method of data collection for the research and will be discussed and critiqued in the following sections.

3.3.1 Positivist Paradigm

The positivist deductive or theory-testing approach is underpinned by objectivist or realistic ontology and is a means of collecting large amounts of data; philosophically, the researcher and the researched group are independent of each other (Philips and Burbules, 2000). This is contradictory to the feminist epistemological position of immersion within the women's lives and interplay between the researcher and the researched (Wilkinson and Kitzinger, 1996).

Reichardt and Cook (1979: p. 10) describe the quantitative paradigm as being a:

> positivistic, objective, particularistic, outcome-oriented and natural science world view

However, critics (Rubin and Rubin, 2001; Bryman, 2008) argue that positivistic quantitative research designs give insufficient attention to people's life experiences, seeking to measure or categorise behaviour or attitude, providing an artificial account of how the social world operates.

The historical feminist critique of the positivist approach is that research methods (in the forms of surveys and questionnaires) have been viewed as a "masculine", patriarchal form of knowledge, with the emphasis on the detachment of the researcher and the collection and measurement of "objective" social facts via a value-free form of data collection (Maynard, 1994: p. 11; Hesse-Biber, 2007). Stanley and Wise (1989) discuss the "subject/object" dichotomy, where positivism sees what is studied as an object, the researcher being the "subject". The objectivity of positivism regards the researcher to be more competent in understanding other people's lives in a detached, objective manner, the prerogative of this being the scientific mind, operating within a scientific ethic, devoid of commitment and value, with inability to generalise and viewing individual experience as subjective (Stanley and Wise, 1989). The feminist response to this recommends the abolition of "research object" with a focus on the ethical and political significance of active participation in actions, movements and struggles, with the argument that research must be an integral part of such struggles (Mies, 2000).

Historically, Oakley (1981) described positivistic research as being associated with male oriented values of control, the controlling of the research between subject/respondent and the research context and situation, in which information is extracted with little, if anything, being given in return. A later criticism was that the more sophisticated the survey and statistical techniques are, the more likely it is that a study will be incomprehensible to potential

beneficiaries and will be manipulated by those who wish to retain their power (Hesse-Biber, 2007). A later paper by Oakley (1999) also criticised large quantitative research projects for the masking of women's voices with the silencing of an oppressed group. However, not all sociologists are in agreement. Letherby and Zrodowski (1995) point out that women exercise power in choosing whether or not to participate in positivist research and that it is the women who choose the level of participation: therefore, collectively, they have the choice about whether to share their voice. Further critique is directed at the researcher's power over the subjects and his or her ability to control what questions are to be asked (Abbot and Sapsford, 2012), which arguably will create power imbalances between the researcher and participant. Gatenby and Humphries (2000) disagree, stating that taking a flexible and open approach to questionnaires and in the researcher's response to them, and taking a flexible approach to participation will ensure that the methodology works in a feminist way. They further state that acknowledging the role of the research in women's lives and the emotion they invest in the research is central to feminist research. However, they are referring to data collection via correspondence *and* questionnaire and acknowledge that a questionnaire alone would not necessarily demonstrate women's experiences in full and would provide a limited epistemological and ontological picture only.

It has been argued that positivist research instruments such as questionnaires or surveys, if properly designed, are potentially less harmful to respondents than engagement within the qualitative interview, with the expression of private thoughts increasing vulnerability (Landman, 2006). Reinharz (2002) supports this argument, arguing that statistical data is useful for feminists for rhetorical purposes in showing that a problem is increasing, spreading into new sectors of a population, or being distributed unequally in a population. Harding (1987) also advocates quantitative data collection as a method of correcting science, rather than abandoning it.

Consideration was thus given to the advantages and the limitations of the positivistic paradigm approach and whether this approach on its own would achieve the research objectives and outcomes and enhance the existing ontological and epistemological assumptions about practice nurses and primary care spirometry. Agreeing with Reinharz (2002), I felt that a primary advantage of the positivist approach would be to gather objective data from a geographically large area and a difficult-to-access sample frame, and test a null hypothesis that practice nurses have no barriers in spirometry assessment and interpretation in clinical practice. Another advantage would be from an ethical perspective, with any potential challenges of researcher familiarity (Hammersley and Atkinson, 2007) being addressed via guaranteed anonymised participation via an intranet questionnaire. As practice nurses are an under-researched group, and are potentially not familiar with research processes, a primary

consideration for me was that a questionnaire via the internet could potentially reduce anxiety and promote participation if anonymity was guaranteed.

However, although a useful and initially relevant method of data collection, it was clear that there were limitations to this unilateral paradigm approach when considering the subjects being researched and the potential limitations to the data collected. To quote Oakley (2004: p.191):

> the most important criterion for choosing a particular research method is not its relationship to academic arguments about methods, but its fit with the questions being asked in the research

I felt, then, that a true reflection of practice nurses' experiences of spirometry assessment in primary care would not be gained with this paradigm alone. Although a positivist paradigmatic approach would enable data to be collected from a large area, and would therefore be useful in determining the distribution of the (potential) problem with spirometry assessment and interpretation throughout the locality, I was concerned that an in-depth knowledge of practice nurses' lived experiences would not be achieved. I would not be given the opportunity to fully immerse myself within the research and achieve praxis, or to significantly empower colleagues and change power relations and inequality (Cook and Fonow, 1990).

I then considered the interpretivist paradigm to determine whether or not it might be a more appropriate method of data collection in researching the lived experiences of practice nurses.

3.3.2 Interpretivist Paradigm

Historically, feminist research has advocated a qualitative approach to understanding women's lives as a dominant mode of doing research (Maynard, 1994), with the face-to-face interview as the paradigmatic feminist method (Kelly et al, 1994). Other interpretivist approaches include oral history, experiential analysis (Reinharz, 1992), participant observation and case history. From a historical perspective, interpretivist paradigmatic research has been almost entirely absent in the research of some social science disciplines and rarely seen in traditional research (Jarayatne, 2000).

The interpretivist approach has been criticised for the lack of scientific rigour (Hammersley and Atkinson, 2003). Silverman (2001) claims that informants' accounts are not so much uncovered as created by the researcher. Bryman (2008: p.391) is also critical of the "researcher's ingenuity" making it virtually impossible to recreate a study and voicing criticism of the common lack of transparency in arriving at study conclusions. However, conflicting opinions on the interpretivist approach have also been expressed by feminist researchers.

Kelly et al (1994) state that a final decision on interpretation is needed if feminist research is to have any effect at all in bringing about change and giving voice to the oppressed and that research should not be concerned solely with issues of representation but with reality. Arguably, though, what is reality and can it be separated from representation? Hinterberger (2007: p. 74) argues that the practices of representation are ethical and political, being directly tied to the production of knowledge and power, and that a politics of representation that stresses the impossibility of ever fully knowing "others" is needed. Spivak (1997: p.283) is in agreement, arguing that the reality of full or complete knowledge of "others" is an impossibility, and that therefore ethical strategies of representing others need to be based on working responsibly within the framework of impossibility. Therefore, I would argue that rather than being concerned with rigid decisions on reality versus representation (Kelly et al, 2004), feminist interpretivist strategies need to seek out new ways for the identification and representation of "others" (Hinterberger, 2007: p. 80).

Further developing the concept of "other" (Hinterberger, 2007: p.80), many feminists have argued that the in-depth qualitative interview is an effective way of achieving an equal power relationship between interviewer and interviewee, allowing the researched an active part in the research process and product, diluting the power imbalance in favour of the researcher (Graham, 1984; Stanley and Wise, 1993). Finch (2004) disagrees, arguing that although feminist research is closely aligned to the interpretivist paradigm, the link is tenuous and may ultimately disadvantage women. Letherby (2004) concurs with this, stating that interview respondents need to know how to protect themselves from interviewers and that the assumption of the nature of power in the interview process should not be taken for granted. She describes power as a two-way process between researcher and respondent, with power lying initially with the interviewee, who has the information, then ultimately with the researcher when the data generation is complete (Letherby, 2004). Researchers therefore have to ensure that information freely given cannot be used against those who gave it. Letherby (2002), in an earlier article, stated that as a feminist researcher, it is the researcher who has the final say in what data is included in the research, thereby claiming a privilege, and also a superiority to be regarded as a "knower" in the way that respondents have.

Participants therefore have potential for misrepresentation as data is analysed from the researcher's feminist standpoint. Letherby and Zrosowski (1995) suggest ways of choosing to keep a check on researcher power: discussing what is made public with participants, sending out drafts of papers and providing forums for joint sense-making of the issues that participants share. They later acknowledge, though, that often there are no comments on draft papers sent out, and suggest that the reason for this is that they are perceived as the "expert" academics and subsequently are often not challenged. However, I would argue that the

potential for misrepresentation is not solely restricted to feminist research: it is a criticism of interpretivist research in general. Cresswell and Plano Clark (2011: p. 211) discuss the challenges to qualitative validity and recommend similar strategies to those outlined by Letherby and Zrosowski (1995) in establishing qualitative validation.

Lather (1991) is critical of researcher imposition and reification in praxis-oriented interpretivist research, imposing meanings on situations rather than constructing meaning through negotiation with research participants. This was an interesting critique for me, as it drew my attention to the potential that I could be researching practice nurses who not only did not feel the need for emancipation and/or feminist understandings, but also did not know or understand why they undertake the role of spirometry within the larger picture of COPD care. As previously mentioned, historically, practice nurses have resisted changes to role and employment status. On reading Lather's work (1991), I became acutely aware of the potential contradictions in having to reflect on attempting to undertake liberatory research on one hand and reflecting on practice nurses who have not experienced consciousness raising and who have no desire for emancipation by praxis on the other.

Mies (2000: p.68) advocates "conscious partiality": that is, partial identification with the research subjects, as opposed to the indifferent, disinterested, alienated attitude of "spectator knowledge" (Maslow, 1966) towards research subjects. Arguably, it would not be possible to achieve spectator knowledge while working as a practice nurse and conscious partiality with widening of my consciousness as a researcher, and the consciousness of the participating practice nurse would be achieved through an interpretivist paradigm approach.

The concept of "conscious partiality" (Mies, 2000) is similar to reflexivity, which involves the continual monitoring of, and reflection on, the research process (Foster, 2012). As a practice nurse, a key element of professional practice is reflection upon actions; however, for the purposes of the study, there was an additional heightened awareness of the need to continually assess the extent of my own role in the process of data collection and interpretation, and to be "analytically reflexive" (Letherby, 2002). I intended to draw on, represent and interpret the experience of the practice nurses and the theorising in which they engaged (Letherby, 2002).

Arguably only limited analytical reflection could be achieved with the positivist paradigm. Realistically, analytical reflexivity could be undertaken in greater depth with the interpretivist method. However, I was aware that my voice as researcher was the "loudest": therefore, throughout the entire process of data collection, I had to strive to be sensitive to the issues of power and control within both paradigms.

Paradigm criticisms can be challenged by epistemological reflection. Epistemological reflection is not "normative" or a finished discipline (Miller and Fredericks, 2002: p. 983), but facilitates recognition that characteristics of what the researcher needs to know cannot be, in part or as a whole, registered, observed or understood by existing theories and/or concepts. Therefore, on epistemological reflection, I felt that there were clear advantages as well as disadvantages to each paradigmatic approach. I was concerned that each paradigm, albeit partially addressing the study aims and objectives, had potential to produce a narrow and selective picture of practice nurses' experiences of spirometry within the primary care setting. My concern was that I that would not comprehensively realise the full experiences of practice nurses or represent and empower the practice nurse voice.

This was supported by Bell and Newby (1977), who rejected the idea that one type of paradigm is better than the other in sociological research. They promoted the concept of methodological pluralism, arguing that sociology should contain a number of different theoretical perspectives, again supporting feminist theory in that the research method should be the one that best fits the characteristics of the phenomena being studied.

Therefore, on further evaluation and study of the paradigmatic philosophy, I decided that the most appropriate and relevant paradigm to underpin the study would be the transformative methodological paradigm.

3.3.3 The Transformative Paradigm

The transformative paradigm serves as an umbrella for research theories and approaches that place priority on social justice and human rights, and is especially relevant for people who suffer discrimination and oppression (Mertens, 2010). I feel that these issues are both relevant to the "Cinderella" status of COPD (Kent, 2001) as a chronic respiratory disease and to the poor status of patients suffering from it. Mertens (2010) describes how the transformative paradigm has guided her in terms of clarification of ethics and values and consequent decisions relating to ontology, epistemology and methodology, referencing her research within deaf and disability communities.

The transformative paradigm is also applicable to the study of power structures that perpetuate social inequities (Sweetman et al, 2010) in human rights and social justice (Mertens and Wilson, 2012), and is therefore relevant and applicable to the silent voice of the practice nurse in general practice.

Cresswell and Plano Clark (2011, p. 97) recommend the use of a transformative design when the researcher determines that a mixed paradigmatic method is needed to address a transformative aim, and summarise the key points of a transformative design as follows:

- The researcher seeks to address issues of social justice and call for change;
- The researcher sees the needs of underrepresented or marginalised populations;
- The researcher has a good working knowledge of theoretical frameworks used to study underrepresented or marginalised populations;
- The researcher can conduct the study without further marginalising the population under study.

The philosophical assumption behind the transformative design is that the transformative paradigm serves the purpose of proving the assumptions underlying this design through the production of credible evidence that is responsive to the needs of marginalised communities (Mertens, 2013). The advocacy and participatory worldview provides an umbrella paradigm to the research and includes political action, empowerment, collaborative and change-oriented research perspectives (Cresswell and Plano-Clark, 2011).

Key advantages of the transformative design are that participants often play an active, participatory role within the research and the collections of methods that produce results are useful to community members and therefore credible to stakeholders and policy makers (Cresswell and Plano-Clark, 2011). Although not a feminist researcher, Greene (2007, p.53) describes the "mental model" of the set of assumptions, understandings, predispositions, and values and beliefs in which a social inquirer approaches the work, and the "dialogic" connection, conversation and understanding that the inquirer brings to the research. She argues that multiple paradigms should be respected, with the purist philosophical incommensurability of philosophical paradigms set aside in favour of active engagement with the diversity of philosophical assumptions and stances in dialogic form.

On reflection, I had a socially constructed knowledge claim that in the capacity of researcher, I wanted to seek understanding of the world in which I work and wanted to look for complexity of views (Cresswell, 2014) on the barriers to accurate spirometry assessment and interpretation for the chronic disease management of COPD. A mixed methods design with a feminist transformative lens as a framework for the study was therefore relevant and appropriate.

However, from an ontological perspective, Broom and Willis (2010) argue that positivist and interpretivist research paradigms are incommensurable and that health research cannot be simultaneously qualitative and quantitative. This was supported by O'Cathain et al (2008),

who, on reviewing 118 mixed methods studies funded by the Department of Health in England between 1994 and 2004, found that although most studies were completed, researchers mainly ignored the mixed methods design and described only the separate components of a study. Qualitative methods in particular were commonly not described in sufficient detail and this occurred more frequently than for the quantitative methods, both within proposals and reports (O'Cathain et al, 2008). This is an example of the historical dominance of quantitative methods in health service research, with unfamiliarity with qualitative research and the mixed method approach to health care. The feminist explanation is that the illustration of historical "masculinist" forms of knowing, which are still dominating health research today, inhibit the mixed methods approach (Maynard, 1994: p. 11). Mertens (2010), in agreement, described how researchers position themselves within the constructivist paradigm and fail to address issues of social justice.

Reichardt and Cook (1979) reject the assumption that paradigms are rigid and fixed, stating that the attributes of the makeup of paradigms are logically independent. Therefore, the only barrier to mixing and matching attributes from both paradigms to achieve the combination that is most appropriate for the research question is tradition. O'Cathain et al (2008) advocate the use of mixed methods for health research but caution that the difficulties in integrating data lie within the inability of the researcher to adopt a reflexive stance to the whole of the mixed methods study rather than the qualitative component only.

Other advocates of the mixed paradigmatic method recommend that the approach should be recognised as a third research paradigm in its own right (Johnson et al, 2007, Creswell, 2014). However, Vogt (2008) is critical of the potential negative and positive aspects of a mixed method approach in exacerbating problems of choice: that is, making complicated choices even more complicated versus the positives of a mixed method approach in opening up opportunities for innovation. This is a negative view and one that is dismissed by feminist researchers. Stewart and Cole (2007) point out that feminists tend to eagerly identify new questions and theories, which demand methods that are often new to the field of study. Furthermore, to exclusively divide qualitative and quantitative methods is epistemologically debilitating, resulting in a knowledge cul-de-sac (Letherby, 2004). Kelly et al (1994) are in agreement, recommending that multiple methods be used in a complementary rather than a competitive way and illustrating how this can be done in their early research on child abuse (Kelly et al, 1992).

Within feminist research, it is claimed that mixed methods are more frequently used than in mainstream research, Sweetman et al (2010) identify thirteen feminist studies that utilised a transformative framework. Reinharz (2002) advocates a mixed method paradigm approach to

feminist research to reflect intellectual, emotional and political commitments and also to reflect the desire to be responsive to people being studied in disclosing previously unexamined and misunderstood experiences by using multiple methods. Other feminist researchers have echoed these assumptions, adding that the combination of methods in feminist research also serves to give a more powerful voice to women's lived experiences (Brannen, 2002; Shapiro et al, 2003).

On considering theoretical concepts, I therefore felt that a mixed paradigmatic approach, enhanced by my clinical background, would enable me as a researcher to link past and present, data collection and action, and individual behaviour and social framework (Reinharz, 2002). This "linking" of history within a social framework is, I feel, particularly relevant to practice nursing with the challenges to role development in chronic disease management in the wake of the 2004 GMS Contract (BMA and NHS Confederation, 2003). "History" in this sense is only nine years, but this is a long enough time period for practice nurses to be able to relate their story within the rapidly changing social framework of primary care.

In addition, although practice nurses' experiences in spirometry assessment and interpretation for COPD chronic disease management have previously been unexamined, the mixed methods approach would enable their stories to be heard, both objectively by means of qualitative data collection and subjectively by means of exploratory interviews.

In summary, Caracelli and Greene (1997, p.29) define a mixed methods transformative design as:

> less to do with methodology and more to do with values or ideology... to represent pluralistic interests, voices, and perspectives, and through this representation, to challenge and transform entrenched positions through the dialogue that the inquiry fostered

A transformative mixed methods approach to research can therefore develop and support ideological theory in underpinning the methodological framework of the mixed paradigmatic method approach.

Chapter 4 Research Design

This chapter will introduce the reader to the research process of the study. The study design and its rationale will be introduced, including the sequence and weighting of the mixed methods in data collection. The research sample and sampling frame will be presented in addition to the quantitative and qualitative data collection methods used and the piloting of the quantitative questionnaire. Ethical and clinical governance issues will also be presented and data collection will be discussed with a rationale for the chosen methods of data analysis presented.

4.1 Mixed Methods Design

Mixed methods research has been described as a methodology for conducting research that involves collecting, analysing, and integrating (or mixing) qualitative and quantitative research methods into a single study (Cresswell, 2014). Essentially there are two main mixed methods typologies; parallel, a design in which two types of data are collected and analysed concurrently; and sequential, where one type of data provides a basis for collection of another type of data. This study was conducted though the implementation of a sequential exploratory mixed-methods approach as identified by Tashakkori and Teddlie (2003) in that I adopted a “less-dominant /dominant” data collection strategy.

The quatative data component preceded the qualitative element but it was the qualitative element that provided the more powerful (dominant) data. As suggested by Tashakkori and Teddlie (2003), I have adopted the convention of emphasising this approach to the data through use of bold type face. The rationale for conducting the quantitative element first was based on the assumption that data collected through the initial questionnaires would be indicative of the key issues and so be used to guide the topic areas covered in the semi-structured interviews. It would also be a method of identifying those respondents who were willing to be interviewed and to share their experiences of spirometry assessment. The process is summarised below as a flow diagram in figure 4.1.

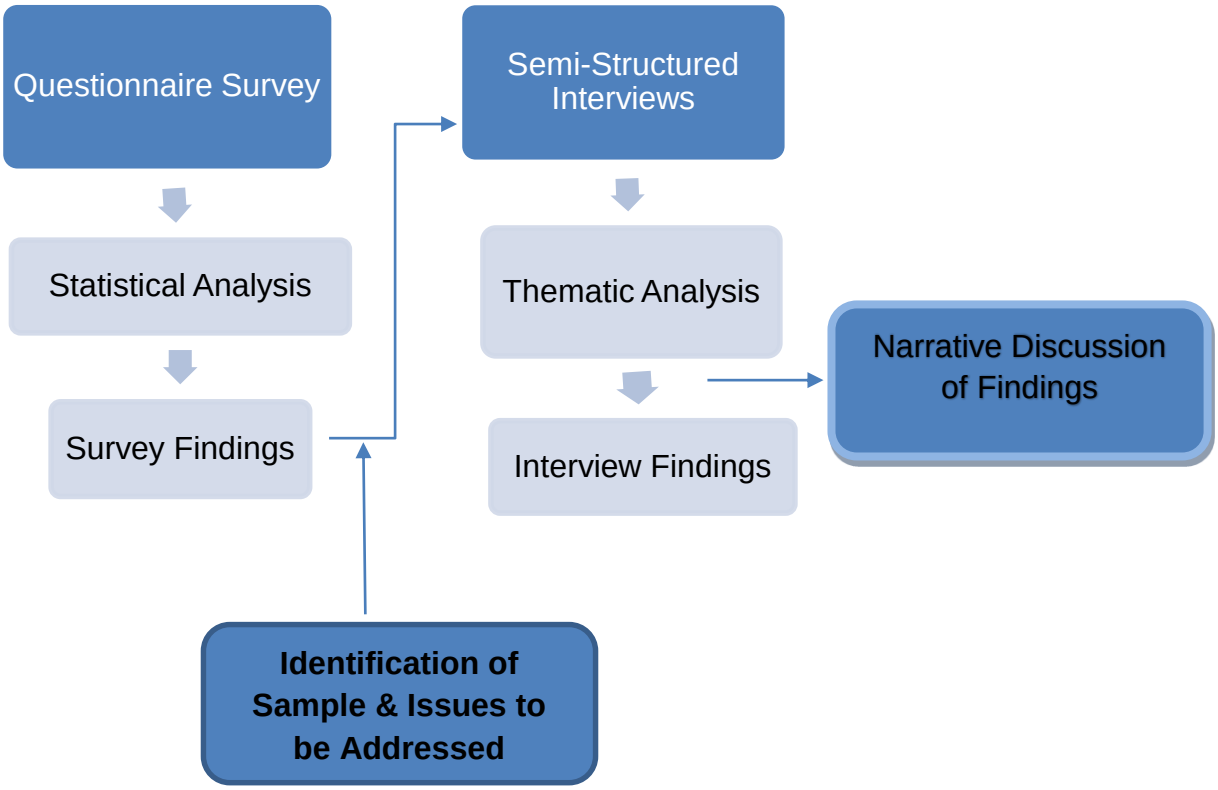


Figure 4.1. Sequential exploratory mixed methods approach (Tashakkori and Teddlie, 2003)

Cabrera states that a sequential exploratory mixed methods designs is ideal for explorations of new phenomena. As discussed, there is little empirical evidence regarding the use and interpretation of spirometry amongst practice nurses, so this approach was seen as ideal for examining the issues surrounding the activity as well as being able to explore the practice nurses' attitudes towards spirometry.

Here is a step-by-step overview of this process:

1) Administration of questionnaire to participants identified within sampling frame (inclusive of invitation for further participation in **qualitative** strand)
2) Analysis of survey data
3) Interviews of nine practice nurses
4) Analysis of transcripts
5) Identification of themes using an analysis method framework (Ritchie et al, 2003a).

4.2 The Sampling Frame

The purposive sampling frame was that of practice nurses within a large UHB in Wales. The UHB was chosen because it is one of the largest NHS organisations in Wales, encompassing two distinct rural and urban demographical areas with a total of sixty-eight General Practices with twenty-two branch surgeries serving a population of approximately 500,000 people (UHB data).

The sampling frame was generated from the UHB website, which lists the number of surgeries within the locality. Elliot (2011) discusses the importance of a search algorithm to generate the sampling frame; however, I had no need to develop a search algorithm, as I liaised with the senior nurse for the UHB, who confirmed that there was a total of 142 practice nurses employed in general practice within the UHB umbrella. Excluding my practice (as I am the only nurse with a respiratory interest), I expected a maximum of 67 responses to the questionnaire, as there is generally a minimum of one practice nurse with a clinical speciality of COPD in each practice. This is reflected across the board with other clinical speciality areas of chronic disease management such as diabetes mellitus.

Ritchie et al (2003b) state that one of the principal aims of the purposive sampling frame is to ensure that all the key constituencies of relevance to the subject matter are covered. Another aim is to ensure that some diversity is included within each key criterion so that the impact of the characteristic is explored. On considering the range of different approaches to purposive sampling, belonging to the same sub-culture and having the common shared characteristics of general practice nurses, the UHB practice nurses were a homogenous samples (Robson 2011): that is, they were specifically chosen to give a detailed picture of a phenomenon. I defined the “symbolic representation” – that is, the unit chosen to represent and symbolise features of relevance to the investigation (Ritchie et al, 2003: p. 83) – as the diversity of roles and scope of practice within the practice nursing population; however, the key criterion was still the practice nursing culture.

It is the role diversity within practice nursing, with the lack of regulation for scope of professional practice from practice nurse to practice nurse that will challenge the concept of data transferability with generalisations made from the sample (Davis and Scott, 2010). However, Bryman (2008) argues that the findings of qualitative research are to be generalised to theory rather than to populations. He further states that it is the quality of the theoretical inferences that are made from qualitative data that is crucial to the assessment of generalisation. Williams (2000) disagrees, arguing that qualitative researchers can and often do make generalisations on instances of broad sets of recognisable features. This “moderatum

generalisation" (Williams, 2000, p.215) can facilitate comparison with other comparable groups, albeit limited and somewhat tentative.

This latter argument is germane to the general practice nursing population, as clinical observations suggest that practice nursing roles differ throughout all regions in Wales. However, the homogenous general practice nursing sample for the study is also reflective of the diversity of general practice nursing roles, ranging from junior to senior practice nurses, specialist practitioners, nurse practitioners and advanced nurse practitioners, and I therefore consider it to be transferrable.

4.3 Ethical and Governance Considerations

Ethical and governance hurdles were successfully overcome with favourable review from the school's Research Review and Ethics Screening Committee. This was followed by favourable review from the school's Research Ethics Committee (REC), in October 2012. Challenges arose from the UHB Research and Development Department (appendix two), however, these were also later overcome.

4.4 Data Analysis

The quantitative data analysis was undertaken using SPSS (version 20) to provide descriptive statistical data in identifying and organising significance and meaning to the raw data. To compare practice nurses who reported high and low levels of confidence, the six point Likert scale was divided with a cut-off point of three to enable a bivariate analysis. Of interest, the bivariate analysis also enabled comparison with the Bolton et al paper (2005), to determine what, if any, changes in self-reported confidence levels in spirometry assessment in primary care had occurred since the introduction of the GMS contract (BMA and NHS Confederation, 2003), in 2004.

Analysis of the quantitative data informed the development of the interview schedule. An inductive approach to the **qualitativ**e data was then undertaken by thematic content analysis via a rigorous and systematic analysis of the data, resulting in the development of concepts and categories. As **qualitative** validation is important to establish (Cresswell and Plano-Clark, 2011), my focus was on the way the theme was treated or presented and its frequency of occurrence, facilitated by a five-stage theoretical approach to documentary analysis: the analysis framework method (Richie et al, 2003a).

4.5 Quantitative Data Collection

The most appropriate method for the quantitative data collection was a questionnaire. Denscombe (2011) summarises the key uses of a questionnaire: when large numbers of respondents in many locations need to be researched; straightforward information needs to be given; standardized data is to be collected and when the social climate is open to allow full and honest answers. On searching the literature, the only questionnaire that was of relevance to practice nurses and spirometry assessment was the self-validated questionnaire from the paper by Bolton et al (2005). However, the questionnaire was dated and contextualised to primary care spirometry as an emerging clinical skill prior to the GMS Contract (BMA and NHS Confederation, 2003). The questionnaire used by Bolton et al (2005) was also a data collection tool for primary care teams, not specifically practice nurses. I therefore needed to develop my own questionnaire, which was contemporary and focused on practice nurses' spirometry assessment and interpretation.

As a pragmatic feminist researcher, although aware of the opposing views towards quantitative research methods (Hesse-Biber, 2007; Letherby and Zrodowski, 1995), I was also aware that quantitative research is not viewed negatively by all feminist researchers. Marshall (1994:112) argues that the anonymous questionnaire is useful for gaining personal and confidential information that a respondent may be reluctant to disclose to an interviewer and the use of various techniques is constructive, as "people respond differently to questionnaires and taped interviews". Marshall (1994) was referring to her research into black female sensuality; however, the comments are transferrable to the practice nursing population, who, for their own reasons, might have had potential hidden agendas and confidential information that they might not want to disclose during qualitative interviews.

The design stage of the questionnaire was key to enable accurate analysis of the data generated. Therefore the research objectives were considered at length to formulate a questionnaire that eventually comprised a series of eighteen questions including yes/no closed answers, lists of options and Likert Scales (appendix 3). I wanted to follow a similar design to the original survey in the paper by Bolton et al (2005), as I was aiming to revisit questions regarding self-reported confidence in spirometry procedure and interpretation. I also wanted to keep the questionnaire as simple as possible for ease of use and also ease of coding and analysis, being a novice with statistical data analysis. Other considerations in devising the questions were to explore anecdotal feedback and negative views expressed by practice nurses to determine whether collectively, experiences and views on spirometry assessment and interpretation were shared throughout the UHB.

Other key advantages of the questionnaire approach are its wide coverage and low cost in administration: it is ideal for coverage needed in non-real time (East et al, 2008). As practice nurses commonly work a variety of part-time hours, access is notoriously difficult. The practice nurses could therefore respond to the survey at a time convenient to them that would not impact on valuable clinical time and it was anticipated that the questionnaire would take no more than ten minutes to access, complete and return.

Consideration had to be given to the best method of distribution and by whom. I had initially felt that contact with the practice nurses to administer the questionnaire myself could potentially be viewed as researcher coercion. This raised fundamental philosophical questions from the beginning as to my relationship as a researcher with the practice nurses in the study and my level of interaction with them. I was challenged epistemologically but on studying the transformative framework I wanted to gather data about the reality of practice nurses and spirometry in an ethical manner to get a real picture of the reality within general practice nursing. I acknowledge that there is no ideal "solution" or set methodological way, so I felt that a mixed methods approach should reflect a mixed approach in both distant and removed to prevent bias and close and involved, also to prevent bias.

The Senior Nurse for the UHB therefore agreed to participate within the research in the capacity of a gatekeeper, distributing the questionnaires to the practice nurses. This would theoretically prevent me from having direct access to the database to contact practice nurses and remove any potential for coercion within the research. It would also be time saving, relieving me of the need to find contact details for each of the 142 practice nurses on the NHS intranet, which at the time was welcome. The most time-effective and appropriate method of distribution was via e-mail as an electronic link to the SurveyMonkey web survey website, accompanying an introductory e-mail (appendix 4) and a letter of information about the study (appendix 5). A contingency plan was established to send a repeat e-mail four weeks later to target late responders and maximise response. Use of a website to gather the data would also reduce researcher familiarity and remove bias (Hammersley and Atkinson, 2007).

The online collection of the responses would also guarantee respondent anonymity, potentially encouraging a higher response rate. East et al (2008) argue that use of the internet can never completely guarantee participants' confidentiality and anonymity; however, this has to be contextualised, as it has been suggested that ethical issues surrounding confidentiality and anonymity with computer-mediated communication (CMC) are the same potential threats that arise within traditional research data collection methods (Kralik et al, 2004). All UHB practice nurses have and use CMC in the cascading of information and general communication within the workplace and UHB. A competent level of CMC literacy could therefore be assumed. As

all communication within the UHB is paperless, this was considered to be the most expedient and time- and cost-saving method for data collection. I set up an account with SurveyMonkey and, by following online tutorials, devised the questionnaire (appendix 3). It was harder to devise in the electronic format than I imagined, especially with the filter questions, directing respondents to appropriate sections. However, I enjoyed the challenges of learning new electronic skills in devising and formatting the questionnaire, and was satisfied with the finished product.

Denscombe (2011) describes the key disadvantages of questionnaires to be poor response rates, incomplete or poorly completed answers, and also that the researcher is not in a position to check the truth of the answers. I would question what a practice nurse has to gain in submitting false answers to an anonymous questionnaire survey. This is supported by the evidence pertaining to disinhibited behaviour on the World Wide Web, with web-based responses potentially being more candid than paper responses thanks to the anonymity offered by CMC (Joinson, 2003). However, my main concern was not with the truth of the answers but with practice nurses actually completing and returning the questionnaire. Wilson and Sapsford (2012) state that unless questionnaires engage the respondents' interest or the investigation is perceived as being of direct value to the respondent, response rates will be low. This was my primary concern, as COPD was a relatively new chronic disease area for practice nurses post-2004. I was also aware that spirometry was perceived as a difficult subject for many practice nurses, and was thus concerned about a potentially low response rate due to lack of interest. There was also the consideration that the questionnaire might be of harm to practice nurses, as it could be perceived that information might be required from them that they did not have and they might feel that their professional knowledge and skills were being questioned and highlighted as being inadequate. However, my view was that any data collected would inform the qualitative strand of the research and was therefore valuable.

Kenny (2005), on describing her research into on-line discussion forums, described how consent would be implied by active on-line participation with posting to on-line discussion boards. It was therefore assumed that informed consent to participate in the quantitative strand was given should the practice nurse return the completed questionnaire.

4.6 Pilot Study

E-mails introducing and explaining the study and incorporating the questionnaire link were sent to twenty practice nurses working within other Local Health Boards in Wales. The pilot sample was therefore representative of the variety of individuals the study was to cover (Bell,

2009). Wilson and Sapsford (2012) argue that representativeness is difficult to guarantee with small samples: therefore, purposive samples need to be constructed.

Although I had the facility via the global address book on the NHS intranet to find out who the practice nurses were, I deliberately chose not to contact them directly, again doing my utmost to avoid any notions of researcher coercion or familiarity (Hammersley and Atkinson, 2007). Using the global address book to find general practices, I chose twenty practices at random and e-mailed the questionnaire to the practice managers from my university e-mail address, requesting that they forward the e-mail to the practice nurses responsible for providing COPD care. I also added a sentence at the end of the email stating that I would welcome written feedback via my university e-mail address or via discussion and provided my mobile telephone number, again striving to minimise researcher coercion by providing a choice of routes for feedback communication.

I was not aiming to sample a full range of responses from the variant skill set amongst the practice nurse population, as I had no way of knowing what level of clinical skills or scope of practice the practice nurses had. I was aiming to cover the range of responses to the possible questions, which would enable me to test the response categories with preliminary statistical analysis and determine how successfully I had planned for the responses. This “counsel of perfection” (Wilson and Sapsford, 2012 p.103) is an effective means of determining unanticipated answers.

I received six completed responses via SurveyMonkey with feedback via e-mail from one practice nurse. The practice nurse stated that both the introductory e-mail and the study information document (appendices 4 and 5) were long but self-explanatory. The practice nurse then stated that the study information document was “a bit off-putting”, as Part Two stated that the researcher reserved the right to inform the practice nurse’s clinical lead should a lack of competence be shown during the interview. This was difficult feedback, as of course this had been highlighted on the NISCHR feedback as being potentially off-putting to respondents. However, ethically, I had no alternative but to proceed as discussed with and approved by the school’s REC review panel.

In summary, the pilot study was useful in determining that the questionnaire was accessible, understandable and usable. No changes were subsequently made to the questionnaire or to the introductory e-mail or accompanying letters.

Reflexive Note

I found the feedback from the pilot study conflicting in my researcher clinician role. This was the first sense of the reality of the project, after four years of academia and planning. My primary concern was that there was potential for data collection to be compromised from the beginning, which would completely invalidate the results and make the study meaningless.

I completely understood the feedback regarding the "competence" issue from a clinical perspective, yet also understood the ethical need to include the statement from the researcher's perspective. This raised the issue of the power I held in being potentially perceived as a researcher making decisions on clinical competency within the lived experience of the qualitative interview, which, of course, is contradictory to the core ethos of feminism. My intention was to listen, with the ultimate goal of empowering and giving voice to practice nurses' experiences. However, there was potential for experiences to be held back as my researcher role could potentially be blurred into that of a clinician-researcher who had extensive prior knowledge of COPD and spirometry, and was therefore threatening. I felt that there was a realistic potential of praxis being compromised or not achieved.

Ontologically I felt challenged. My personal perspective on this was that as a researcher, and an equal to the research process, I had no right to make decisions on whether clinical competency was poor, and my purpose as researcher was to listen and try to assess the individual nurses' meanings about social reality in working within general practice and providing a spirometry service for the chronic disease management of COPD. I did not want to be perceived as the "power" within the process.

The ethical and clinical struggles on this issue continued throughout the data collection process but pragmatically, to address this issue, I felt that I could negate my perceived power and authority as researcher in being sensitive, yet clear in discussing the parameters of the interview and accurately defining what was meant by "lack of competence" when seeking the practice nurses' consent prior to the interview. I also realised, for the first time, the absolute responsibility of my role as the researcher in giving concise and clear explanations, and also reinforcing the right of the practice nurses to withdraw data or not proceed to data collection if they were not comfortable with the explanations offered.

A further example of researcher and respondent power was, I felt, given by the fourteen surveys that were not returned, with silence from the practice nurses on any form of feedback. However, although this could be attributed to professional choice in not returning the survey, there were also variables in the pilot study process that could have harmed the response rate, such as the practice managers not forwarding the questionnaires, or there being no practice

nurses offering a COPD service. These were all issues that had to be acknowledged and taken forward into the quantitative data collection strand of the research.

4.7 Qualitative Data Collection

On considering the nature of the data and subject matter, I decided to collect **qualitative** data via one-to-one in-depth interviews as opposed to focus group meetings. The nature of practice nurses' work, involving part-time hours, identifying a convenient central location and the potential need for a professional facilitator (Green, 2010) gave rise to insurmountable obstacles that were impractical, and also costly in time and expense. Further, as the composition of the focus group is a key factor to the success of the project (Hammersley and Atkinson, 2007), I felt that I would struggle to achieve a cross-section of skills to meet the research aims and would in all likelihood attract only skilled and experienced practice nurses who were confident in sharing their knowledge on spirometry assessment and interpretation.

I therefore considered one-to-one semi structured interviews as the most appropriate method of **qualitative** data collection and one that potentially would attract less skilled nurses who would not be comfortable participating in a more open forum. Mansell et al (2004), discussing the issues they encountered in their focus group research on palliative care service provision, describe how hierarchal differences within one particular group led to minimal trust and disclosure with heightened levels of anxiety. I felt that one-to-one interviews would be less authoritative, as I would not have to be so visible in co-ordinating and facilitating focus group discussion.

Lewis (2003) describes in-depth interviews as a means of generating detailed personal accounts, often of complex processes and issues. This method can understand motivations and explore sensitive issues, impacts and outcomes. In-depth face-to-face interviews are also regarded as the paradigmatic "feminist method", where inter-subjectivity and non-hierarchal relationships between women researchers and women participants can be developed (Kelly et al, 1994, p34). Howe (2004: p. 54) developed this concept further by describing how qualitatively driven praxis promotes deep listening between the researcher and the researched, to get a:

> deeper and more genuine expressions of beliefs and values that emerge through dialogue (and) foster a more accurate description of views held.

Hesse-Biber (2010) also adds that **qualitative** approaches tend to be more open to new information, as they are less confirmatory (hypothesis testing), but more exploratory and theory generating.

A request for voluntary contribution to the **qualitative** strand was made within the accompanying participant information sheet (appendix 5) that was sent to all the practice nurses with the introductory e-mail (appendix 4) and questionnaire link (appendix 3). The original aim was to select a minimum of five practice nurses from the urban area and five from the rural area of the UHB from the volunteered responses. Interviews would be conducted in a neutral venue of the local Clinical Research Facility, or at the participant's clinical base, according to interviewee preference. Two weeks' interview notice would be given with written confirmation of the arrangements. Prior to the interview, each participant would be asked to sign an informed consent form (appendix 6) and the interview, although semi-structured, would conform to an agreed protocol as recommended by the school REC (appendix 7). I planned to review the relevance of the interview protocol and the suitability of the questions once preliminary data analysis from the quantitative strand had been undertaken. Should the protocol need amending, the plan was to resubmit the revised interview protocol to the school REC for approval.

Feminist researchers argue that there is a cultural affinity between women interviewers and their subjects by virtue of their subordinate status (Finch, 1984, Oakley, 1981). As a practice nurse interviewing practice nurses, I certainly had the cultural affinity, with shared aspects of cultural background being helpful in enriching understanding of participants' accounts, inclusive of the language used with nuances and subtexts (Lewis, 2003). However, irrespective of this shared culture and background, there was still potential for me to be viewed as powerful and threatening, as the subject area is my known clinical speciality. I attempted to minimise perceived threats and equalise my role as researcher to that of the practice nurses through an introductory e-mail clearly stating that the aim of the interview was for data collection as a means to identify what measures need to be put in place to support colleagues in the future in improving practice-nurse-led spirometry for the chronic disease management of COPD in the long term.

Marchbank and Letherby (2007: p.29) identify the importance of diluting the "power imbalance" in favour of the researcher by establishing a non-hierarchal relationship between interviewer and interviewee. I intended to clearly reiterate at the start of the **qualitative** interviews that I was not aiming to assess the individual practice nurses' skills, and to carefully outline the parameters for interview from the outset. I also intended to inform the nurses of their right to withdraw from the research with no explanation and their right to decline to answer any questions.

As the interviews were to be recorded, and later transcribed, it was also intended that parameters for confidentiality would be set and discussed prior to the interview and included

in the consent form. The transcripts and written consent would also be kept in a secure locked cupboard and stored for fifteen years before being destroyed (Host University, 2012).

I was also aware that not all COPD disease registers in general practices are accurate, as this issue had been previously raised at practice nurse meetings. However, this is not pertinent to the project and it was intended to include this as one of the parameters for discussion prior to interview. I was aware that reference might be made to inaccurate COPD registers, but from the outset, I had no intention of exploring any raised comments further.

I intended to promote confidentiality of all data collected by password protecting data files, anonymising participants' identity prior to transcription of the **qualitative** data and also securing data transcript files via password-protected net storage within the University portal (Host University, 2012).

4.8 Data Collection

Six months behind schedule, I was ready to start the data collection in April 2013. Data collection then had to be postponed for another six weeks due to the measles outbreak in South Wales. It was completely appropriate to delay the start of my data collection at this time, as the additional work created by the outbreak took priority over all other clinical work and projects.

By mid-May 2013, data collection finally began. A year behind the planned schedule, the introductory e-mail, explanation of the study and questionnaire link were cascaded throughout the UHB via the Senior Nurse, and again cascaded four weeks later as planned. I had received several volunteers for the **qualitative** strand during this time and replied to all the volunteers via e-mail informing them that they would be contacted once the quantitative data had been collected and analysed.

Reflexive Note

My attempts to be distant and unbiased in the quantitative strand turned out to be somewhat futile. My strategies of using the Senior Nurse for the UHB as a gatekeeper and also using my university e-mail address as a means of distancing myself were bypassed and I began to form research relationships with the practice nurses. I was contacted directly via my UHB e-mail address by several practice nurses informing me that they had completed and returned the questionnaire, and asking me more questions about my research.

The more contact there was, the more my UHB e-mail address was used, with few nurses actually using my University e-mail address. Several practice nurses, after initially volunteering to participate in the **qualitative** strand via my University e-mail address, slowly migrated to my UHB address when arranging dates, times and venues for interviews. I did not discourage this, initially thinking that it was easier for the nurses to use the intranet as a point of contact; however, I have subsequently realised that it was an indication of relaxation and informality within the research process and a further indicator of acceptance of the research process with negation of the researcher and "object" role.

I interpreted this emerging social network as a positive sign that I had achieved my goal in developing meaningful relationships with the practice nurses in that I had successfully reduced the power differences between myself as a researcher and the practice nurses as participants. However, I was aware that as a result of the research, I had inadvertently formed a network of practice nurses who shared common interests in COPD care and spirometry. Although this also signalled to me that I was not an isolated practitioner with my passion for improving COPD care within general practice, I did feel the weight of responsibility and was concerned that I had inadvertently promoted myself as an expert resource for COPD within the practice nursing community in which I worked. Future stepping down from this position would therefore be difficult. One practice nurse has recently contacted me to ask for advice on spirometry training courses. I feel that this is a significant development and an example of praxis following her participation in the research; however, it could also be an example of me being now regarded as an expert resource to guide her. This in turn raises new issues to reflect on about the development or discontinuation of relationships fostered during the research process.

New relationships continued to develop after data collection was completed. One practice nurse attended an evening meeting I recently talked at and actively participated within post-meeting discussion on the future of COPD care within general practice. This was empowering for me, as before her interview, the practice nurse had signalled to me, both verbally and non-verbally, that she was uncomfortable with the recording of the interview. Sensing her discomfort, I had offered to proceed no further with data collection, but she had insisted that I go ahead with the interview. She was withdrawn and "closed" during the interview, offering little information for me to explore in realising her lived experience of spirometry assessment and interpretation. Hers was the one interview in which I felt my authority as researcher to be more dominant than her participation. I was so uncomfortable after the interview that I contacted her after a week to check that she was still willing for her data to be used for analysis, as I had fully expected her to contact me to withdraw her data and I had not heard from her. She was surprised that I had contacted her and laughed, stating that she was more

than willing for me to use her data and that she had been nervous because she had not been interviewed “like that” before.

Even though I felt just as uncomfortable as her, she has clearly been empowered and liberated by participation in the research in becoming socially active and publically expressing her views on COPD care and spirometry. Although I felt her interview to be mutually uncomfortable, the sharing of her lived experience had clearly been emancipating for her. This created further reflection for me in my judgement that I had misread the situation. Practice nurses are all different in their views and experiences and although ensuring that no harm arises from research participation should be an overriding factor, perhaps I had been over-sensitive to her anxiety during the interview. I did not know her before she volunteered for the interview and the fact that she had volunteered, and incidentally had asked to be interviewed at my clinical base and made the effort to drive across the city on a day off work, should have signalled to me her commitment to participating within the research.

Other participants have kept in touch via e-mail, asking me recently if and when I am going to complete my research and if they can read my thesis on completion, which I am happy for them to do, as I regard myself as giving voice to and representing their experiences. One practice nurse in particular has e-mailed twice to check my progress. This practice nurse asked if she could meet me in the neutral venue of a public house and throughout the course of the interview drank a large glass of wine. I was later concerned that the alcohol might have had a disinhibitory effect on her interview and also contacted her after the interview to check that she was still willing to have her data used, as I felt I had a moral duty of care as researcher to not take advantage of her. However, she was more than willing to proceed, stating that the wine had helped her voice her “real” views on the frustrations within her workplace in trying to provide a COPD service.

It was also interesting to reflect on other venues that were chosen by the practice nurses, which consisted of my clinical base and their own clinical bases. I had not expected any of the nurses to want to come to me and had naively expected to meet on the neutral ground of the research and development department or their own clinical bases. Three of the nine practice nurses requested my clinical base, two of whom wanted to ask questions on spirometry and COPD care after the interview finished and the tape was switched off. On reflection I regarded this as almost a bartering of intellectual exchange of knowledge, with the practice nurses offering their worldview of spirometry in exchange for a one-to-one tutorial on spirometry assessment (mainly interpretation) in exchange.

I was pleased to have been in this situation with the mutual exchange of information, as I felt these experiences equalised power relationships within the research. I also recognise this as

my immersion within the research process but also recognise the blurring of and tension within researcher-clinician roles. I would add, though, that had I not been skilled in spirometry assessment and interpretation, the practice nurses might not have participated within the research, as clearly, my clinical skills and knowledge were the “carrot on the stick” for participation and mutual sharing of information.

I visited five practice nurses’ clinical bases for the rest of the interviews and was struck by the contrast in formality at attending the clinical bases as opposed to my perceived informality of the practice nurses visiting me and of course the interview undertaken at the public house. In contrast to practice nurses choosing their interview times when they attended my clinical base, being greeted and seen immediately on arrival and offered tea or coffee before the interview started, on visiting clinical bases, I had no control over times, commonly had to wait to be seen and had to announce my presence via the reception staff. I was usually fitted in at the ends of morning or afternoon clinics, which were often running behind. This was a positive experience for me as a reminder of power balances within the research and I feel that my visiting of other clinical bases kept me grounded during the process of data collection.

Other experiences were that these interviews tended to be more formal in general. On reflection, I think this was because I was perceived as a visitor, or perhaps I was more formal in my approach, as I was away from the familiar surroundings of my own clinical base (or indeed the public house). As a result, it was during the course of these interviews that I felt the sense of being the researcher as opposed to researcher-clinician, although I felt that there had been a continuum and consistency in my interviewing throughout the data collection. There was no mutual sharing of information and I was not asked any questions after the interviews, other than practice nurses commonly expressing their need for reassurance that they had “done alright”.

One practice nurse (as I noted down immediately afterwards in the car park) stated that she didn’t feel she knew a lot about spirometry but knew what it was like to struggle to recruit research participants, as she had had a negative experience of recruitment to a research project she had undertaken for a undergraduate degree several years earlier. This added a new perspective to my data collection, as the practice nurse’s priority was to support me in my researcher role rather than share her thoughts on spirometry assessment and interpretation. She had clearly been empowered by her previous experience in research, and I felt that she was showing solidarity to practice nursing research by supporting me in achieving my goals. However, this was also a challenging interview, as we had several interruptions from telephone calls and other members of staff entering the room. As a result, I found that the practice nurse was distracted and more focused on other issues. It seemed that she had

shown her support to me and upheld her personal beliefs in nursing research but lacked focus on the subject I was researching. I did offer to rearrange and repeat the interview; however, this was declined.

I found data collection to be a valuable experience in that it was a powerful reminder that however well planned in advanced, data collection will run its own course and to its own pace. Cook and Fonow (1990) focus on the epistemological principles of need for research to mean something and to lead to change in women's lives; describing feminist research as not research about women but research for women to be used in transforming their sexist society. I felt that I had conducted my research in keeping with the epistemological principles (Cook and Fonow, 1990) as I was exposed to, and had to reflect on several issues that I had not considered in advance, such as the relationships developed during the process, the impact of the venue on data collection, and my role as researcher clinician during the process.

The following chapter will inform the reader of the results of the data collection.

Chapter 5 Results

5.1 Introduction and Quantitative Objectives

This chapter will introduce the reader to the quantitative results in Section 1, followed by the **qualitative** results in Section 2.

The objectives of the quantitative strand were to:

1. Report the numbers of nurses undertaking spirometry assessment and interpretation
2. To identify the confidence of practice nurses undertaking and interpreting spirometry
3. Describe reasons for practice nurses' lack of confidence in spirometry assessment and interpretation
4. To ascertain what guidance or support exists for practice nurses when undertaking and interpreting routine annual spirometry screening for patients with diagnosed COPD
5. To articulate what processes/attempts are in place/have been made to address any existing barriers to accurate spirometry and interpretation

Reported guidance/support mechanisms used by practice nurses when undertaking routine spirometry assessment and interpretation for COPD chronic disease management, with the usefulness of the support mechanisms, will also be assessed. Questionnaire data will also be used to assess whether the independent variables of training, length of service and size of practice are related to the dependent variables of confidence in spirometry assessment and spirometry interpretation.

Based on my experience and any theory, the hypothesis for the quantitative strand was:

1. Practice nurses are not confident in undertaking and interpreting spirometry for COPD chronic disease management

5.2 Section One: Quantitative Data

5.2.1 Questionnaire

In total, sixty-seven surveys were e-mailed out within the UHB. Feedback relayed from the Senior UHB nurse was that one general practice did not have a spirometer and two general practices did not have a practice nurse in post undertaking spirometry. The sample was therefore reduced to sixty-four.

Of the sixty-four surveys sent out, twenty-eight were returned, providing a response rate of 44%. One respondent was screened out on the first question, as the respondent indicated she did not undertake spirometry assessment in clinical practice. Excluding this respondent reduced the response rate to 42%, therefore analysis was limited to descriptive analysis only. I had hoped for a higher response rate and was disappointed, but not surprised that due the low response, analysis was limited. As data collection was undertaken towards the end of the measles outbreak, and as I was more than aware of the strain the outbreak had put on general practice, I felt lucky that I had any quantitative data to work with at all. On a positive note, although the data was limited to descriptive analysis, analysis still could identify areas to inform and give direction to the **qualitative** strand.

5.2.2 Confidence in Spirometry Procedure

The first analysis was to determine the level of confidence amongst nurses in the spirometry procedure. Of the twenty-seven practice nurses undertaking the spirometry procedure, eight (30%) reported that they were highly confident with the procedure, while the remaining nineteen (70%) reported less confidence. There appeared to be more nurses who reported that they were confident and highly confident than the number who reported that they were less confident (Table 5.1).

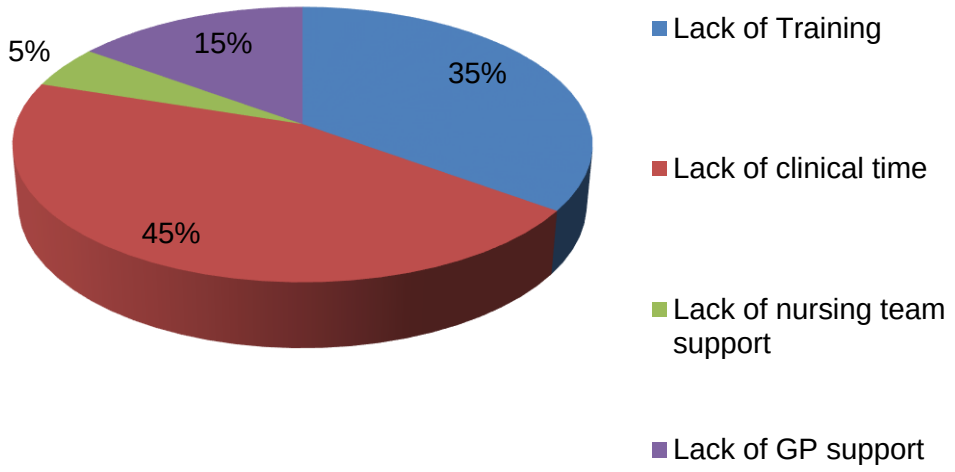
Table 5.1 Level of Confidence of Practice Nurses Undertaking the Spirometry Procedure

Confidence with Spirometry Procedure	Practice Nurse (n)
Little Confidence	1
Not Confident	6
Neither Confident or not Confident	2
Confident	10
Highly Confident	8
Total	27

Of the nineteen practice nurses who did not report being highly confident in undertaking the spirometry procedure, reasons for lack of high confidence were reported across four main areas: lack of training, lack of clinical time, lack of GP support and lack of nursing team support. Interestingly, a fifth option, which was lack of practice manager support, was not reported by any of the practice nurses. The largest proportion, nine nurses (45%), reported

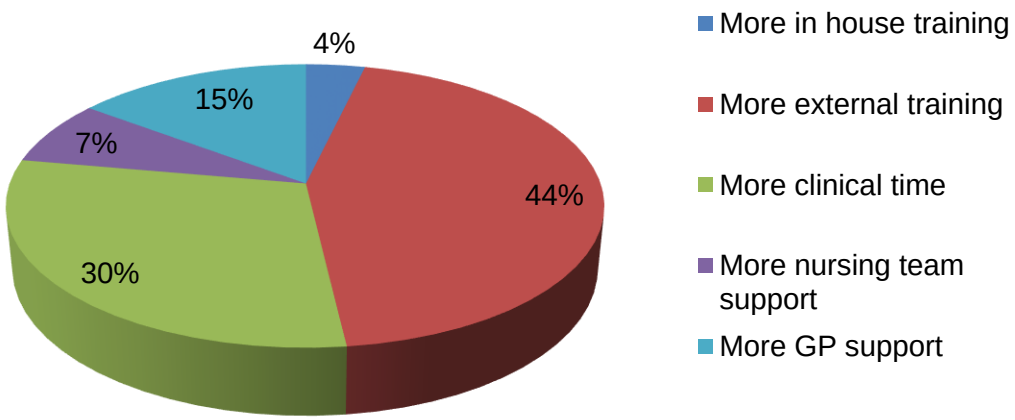
that lack of clinical time affected their ability to undertake spirometry assessment at a highly confident level, and seven (35%) practice nurses reported lack of training to be the reason why they were less than highly confident. Three (15%) reported lack of GP support and one (5%) lack of nursing team support as reasons why they were less than highly confident in spirometry assessment (Figure 5.1).

Figure 5.1 Reasons for being Less than Highly Confident in Undertaking the Spirometry Procedure



The practice nurses were then asked to report what they would ideally like, to improve confidence in undertaking the spirometry procedure. The majority of practice nurses, (twelve: 44%), reported that they wanted more external training to improve confidence in the procedure. Meanwhile, eight (30%) practice nurses reported that more clinical time would help to improve their confidence in the procedure, and four (15%) reported that more GP support would improve their confidence levels. Lower responses were reported for the remaining options (Figure 5.2).

Figure 5.2 What Practice Nurses Would Ideally Like to Improve Their Confidence in Undertaking the Spirometry Procedure

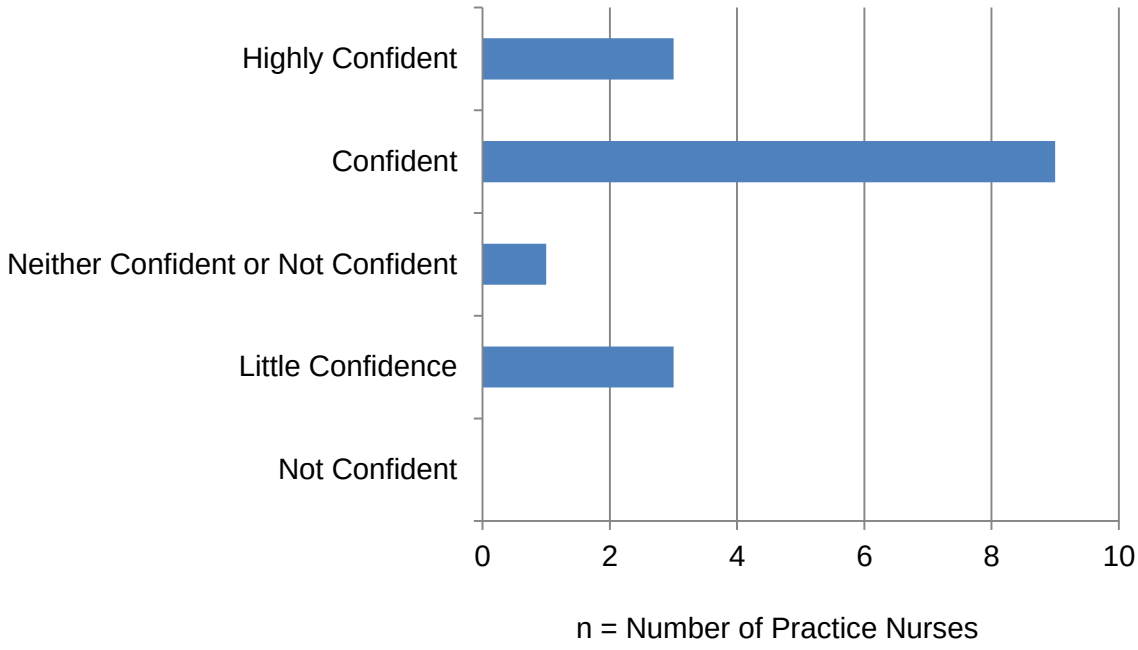


5.2.3 Confidence in Spirometry Interpretation

Allowing for the practice nurse screened out on the first question of the survey, the valid percentage of practice nurses who interpreted spirometry traces as part of their clinical role is sixteen (60%). Eleven practice nurses (40%) therefore did not interpret the spirometry trace.

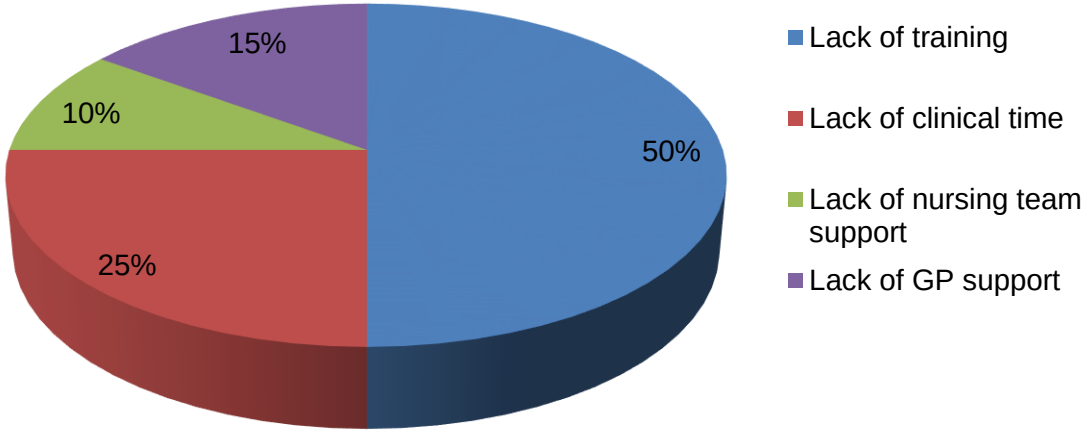
On analysing the reported levels of confidence in spirometry interpretation, the majority of practice nurses (twelve: 75%) reported that they were highly confident and confident with interpretation, but the remaining four (25%) reported less confidence (Figure 5.3).

Figure 5.3 Levels of Confidence in Practice Nurses Undertaking Spirometry Interpretation



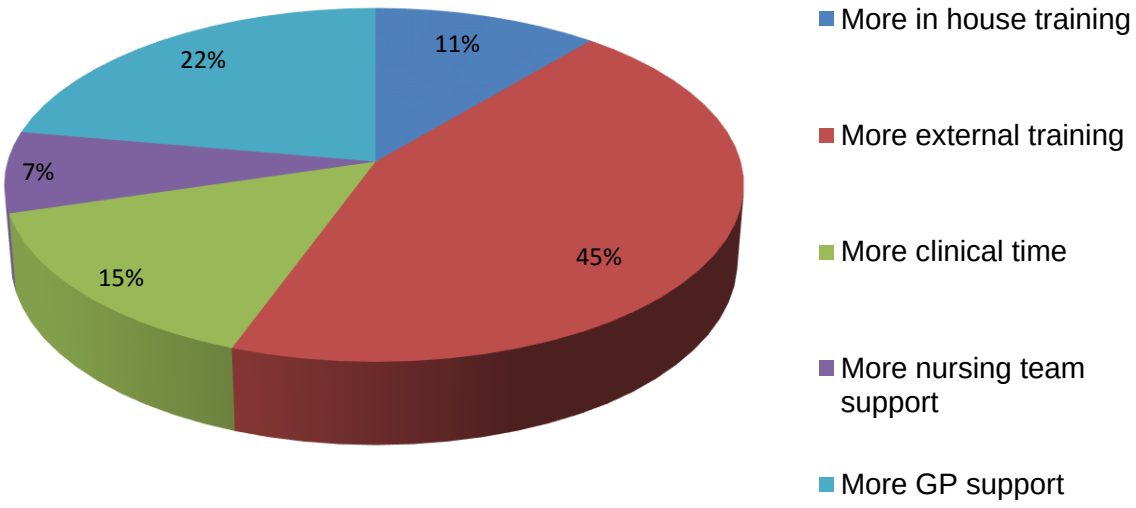
Of the sixteen practice nurses who did not report being highly confident in interpreting the spirometry trace, reasons for lack of high confidence were again spread across four domains of training, clinical time, nursing team support and GP support. Unsurprisingly, ten (50%) practice nurses reported that lack of training affected their levels of confidence in interpreting the spirometry trace and five (25%) reported that lack of clinical time had an impact on their confidence. Two (10%) practice nurses reported that lack of nursing team support affected their levels of confidence and three (15%) reported lack of GP support to be a reason for affecting confidence levels (Figure 5.4).

Figure 5.4 Reasons for being Less than Highly Confident in Interpreting the Spirometry Trace



When asked what they would ideally like to have in improving confidence in spirometry interpretation, the majority of respondents (twelve: 45%) reported that they wanted more external training. Six (22%) practice nurses reported that they would ideally like more GP support, while four (15%) reported that they would like more clinical time for interpretation. Two (7%) practice nurses reported that more support from the nursing team would help to improve their confidence levels in interpretation, and only one practice nurse (5%) reported that more in-house training would ideally improve confidence levels (Figure 5.5).

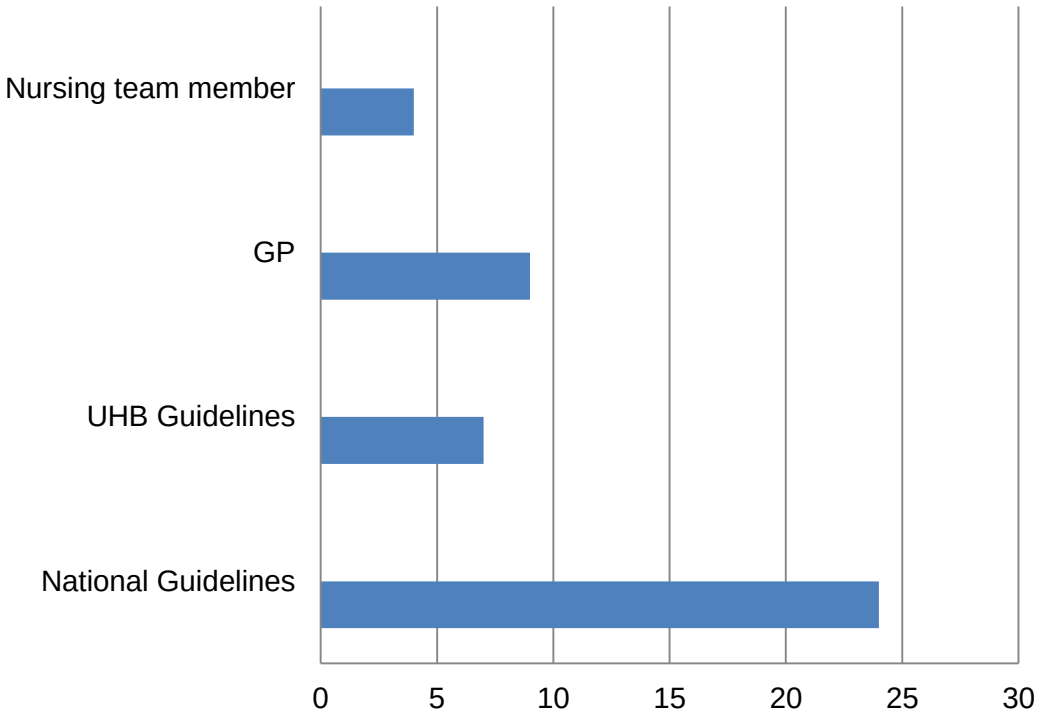
Figure 5.5 What Practice Nurses Would Ideally Like to Have in Improving Confidence in Interpreting Spirometry



5.2.4 Guidelines/Support Used Within the Clinical Workplace

Practice nurses were asked to indicate what guidance/support mechanisms for spirometry assessment/interpretation they used in their clinical workplace. Twenty-four (88%) practice nurses reported that they used national guidelines for guidance and support in clinical practice and seven (26%) reported that they used UHB guidelines. Nine (33%) practice nurses reported that they referred to the GP for guidance, and four (15%) reported that they referred to a nursing team member. Thirteen (48%) practice nurses ticked more than one response, which suggests that a range of support mechanisms and guidance are used in clinical practice (Figure 5.6).

Figure 5.6 Guidance/Support Mechanisms for Spirometry Assessment and/or Interpretation in the Workplace



Practice nurses were then asked to report how helpful the guidance/support mechanisms in practice were. Only three (7%) practice nurses reported the guidance/support mechanisms for spirometry assessment/interpretation in clinical practice to be highly helpful. This is in contrast to ten (36%) practice nurses who reported that they found the guidance/support mechanisms to be only slightly helpful. In total, the majority of practice nurses, eighteen (71%), found the guidelines/support mechanisms for spirometry assessment and interpretation in the workplace to be moderately helpful or less (Table 5.2).

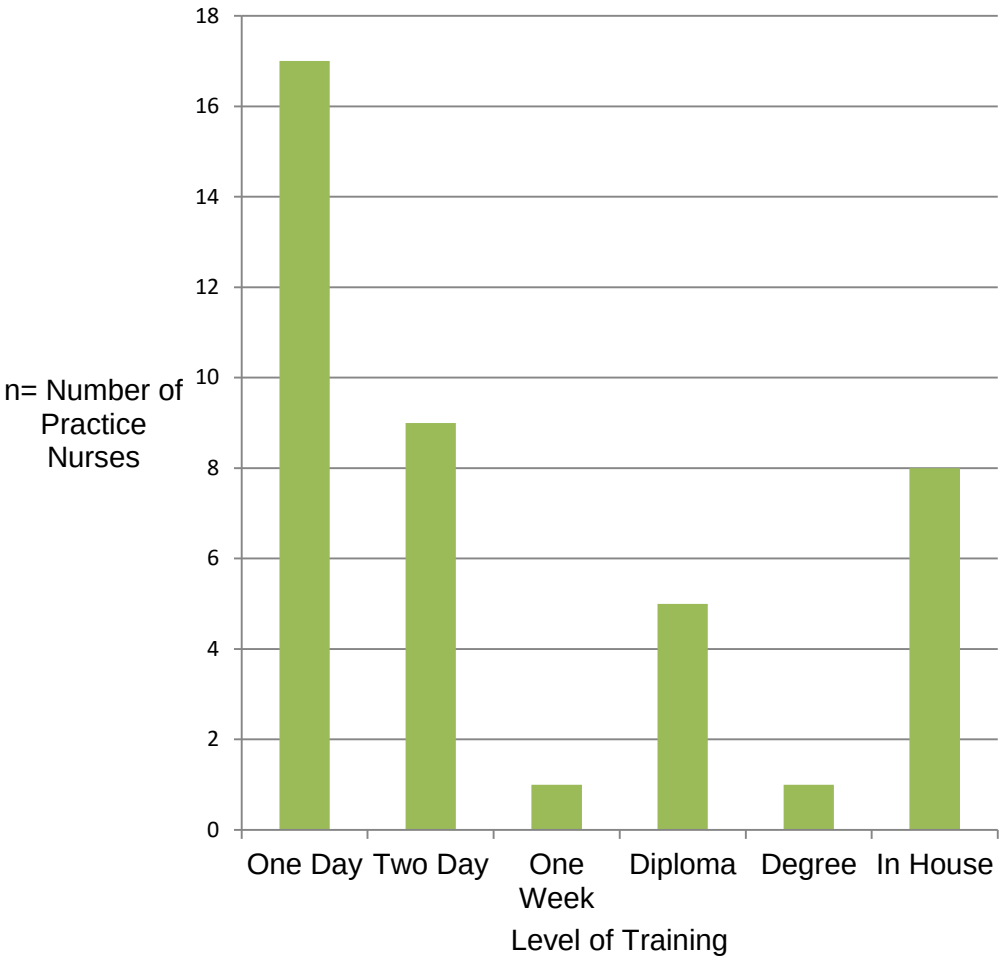
Table 5.2 Levels of Helpfulness of Guidance/Support Mechanisms for Spirometry Assessment and/or Interpretation in the Workplace

Level of Helpfulness	Practice Nurses (n)	Percent
Extremely Helpful	3	10.7
Very Helpful	5	17.9
Moderately Helpful	8	28.6
Slightly Helpful	10	35.7
Missing	2	7.1
Total	28	100

5.2.5 Level of Training Undertaken

I wanted to determine the levels of training undertaken for spirometry assessment and/or interpretation, and on analysis, I found that more than one answer had been ticked by the practice nurses, as there were thirty-nine responses in total. This suggests that practice nurses had undertaken more than one type of training. Of the twenty-seven nurses completing the survey, seventeen (63%) and nine (32%) practice nurses had completed the one-day and the two-day Introduction to Spirometry course respectively (Figure 5.7).

Figure 5.7 Level of Training Undertaken by Practice Nurses



I then wanted to determine the levels of confidence in the spirometry assessment procedure in relation to training. Ten (33%) practice nurses reported higher confidence having had training of two days and more, while five (18%) practice nurses reported low confidence with in-house and one-day training. This is comparable to five (18%) practice nurses who reported high confidence with in-house and one-day training (Table 5.3).

Table 5.3 Training and Levels of Confidence in Spirometry Assessment

Type of Training	Level of Confidence		Total
	Low	High	
In-house	1	1	2
One day	4	4	8
Two days	0	2	2
Three days	0	1	1
Week	0	1	1
Diploma	0	5	5
Degree	0	1	1
Total	5	15	27

Practice nurses were then asked to report levels of confidence in spirometry interpretation, with the amount of training undertaken. Ten (37%) practice nurses reported higher confidence with training of two days and greater. One (4%) practice nurse reported low confidence with spirometry interpretation training at degree level. Four (15%) practice nurses reported low confidence in interpretation with in-house training and one-day training. This is comparable to three (11%) practice nurses who reported high confidence with in-house and one-day training (Table 5.4).

Table 5.4 Training and Levels of Confidence in Spirometry Interpretation

Type of Training	Level of Confidence		Total
	Low	High	
In-house	1	0	1
One Day	3	3	6
Two Days	0	2	2
Three Days	0	1	1
Diploma	0	5	5
Degree	1	0	1
Total	5	16	21

5.2.6 Length of Service as Practice Nurse

Interestingly, six (23%) practice nurses who have worked for ten years or less reported low confidence in spirometry assessment, in comparison to twelve (44%) who have worked for ten years or less, who reported high confidence in spirometry assessment. Twenty (77 %) practice nurses in total reported high levels of confidence in spirometry assessment irrespective of time in employment as a practice nurse. None of the practice nurses who have been in the role for eleven years or more reported low levels of confidence in spirometry assessment, with eight (30%) practice nurses who have worked for eleven years or more reporting high levels of confidence with the spirometry procedure (Table 5.5).

Table 5.5 Length of Service and Levels of Confidence in Spirometry Assessment

Level of Confidence	Length of Time Worked as a Practice Nurse				
	0-5 years	6-10 years	11-15 years	16+ years	Total
Low Confidence	5	1	0	0	6
High Confidence	3	9	3	5	20
Total	8	10	3	5	26

On analysis of the reported responses of levels of confidence in spirometry interpretation, four (19%) practice nurses who have worked for ten years or less reported low levels of confidence, in contrast to one (8%) practice nurses who had worked for over sixteen years reporting low levels of confidence in spirometry interpretation. Sixteen (76%) practice nurses who have worked from 0-16+ years reported high levels of confidence in spirometry interpretation, with the majority, nine nurses (43%) reporting high levels of confidence in spirometry interpretation having worked for ten years or less (Table 5.6).

Table 5.6 Length of Service and Levels of Confidence in Spirometry Interpretation

Level of Confidence	Length of Time Worked as a Practice Nurse				Total
	0-5 years	6-10 years	11-15 years	16+ years	
Low Confidence	2	2	0	1	5
High Confidence	1	8	3	4	16
Total	3	10	3	5	21

5.2.7 Practice Population Size

Six (24%) practice nurses working within practices with 11,000 and fewer patients reported low confidence levels in spirometry assessment. Nineteen (76%) practice nurses reported high confidence in spirometry assessment in all the practice population sizes (Table 5.7).

Table 5.7. Practice Population Size and Levels of Confidence in Spirometry Assessment

Level of Confidence	Practice Size				Total
	1000-5000	5100-8000	8100-11000	11000+	
Low Confidence	0	5	1	0	6
High Confidence	2	7	7	3	19
Total	2	12	8	3	25

On analysing reported confidence levels in spirometry interpretation relating to the size of the practice population, five (25%) practice nurses working within practices with 11,000 and fewer patients reported low confidence in spirometry interpretation. Fifteen (75%) practice nurses reported high confidence in spirometry interpretation amongst all the practice population sizes. The greater reported confidence in spirometry interpretation was from nine (45%) practice nurses working within practice populations of 8,100 patients and above (Table 5.8).

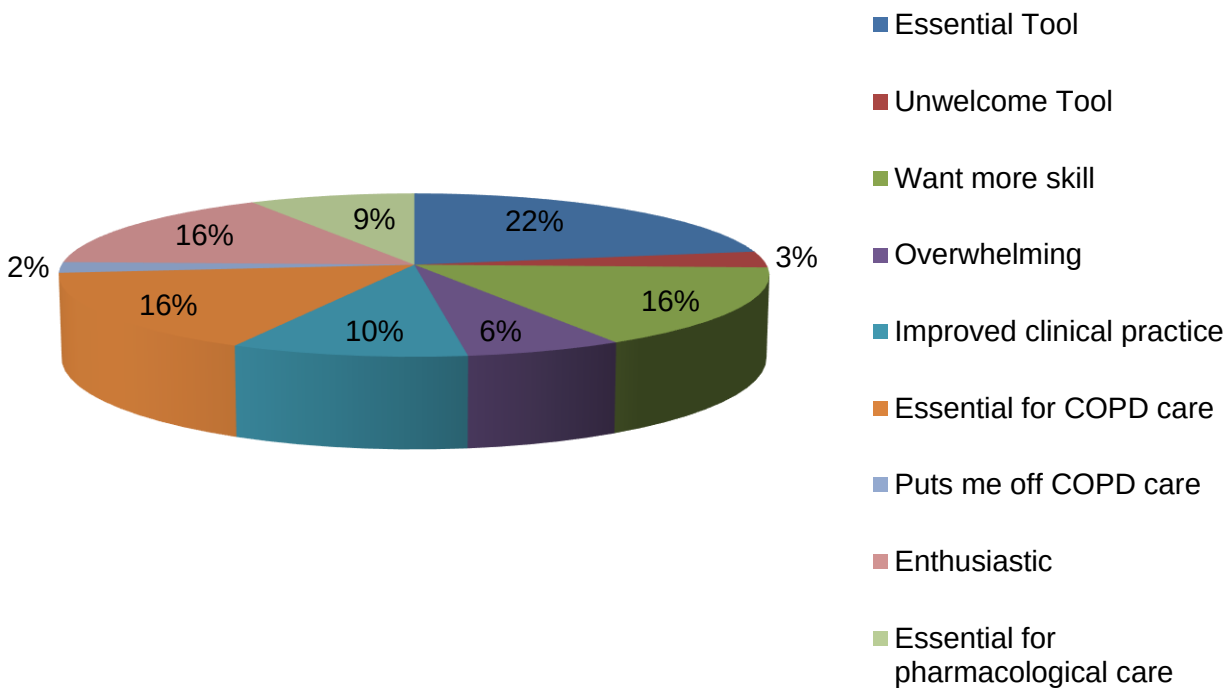
Table 5.8 Practice Population Size and Levels of Confidence in Spirometry Interpretation

Level of Confidence	Practice Size				Total
	1000-5000	5100-8000	8100-11000	11000+	
Low Confidence	0	3	2	0	5
High Confidence	2	4	6	3	15
Total	2	7	8	3	20

5.2.8 Practice Nurses' Views on Spirometry Assessment and Interpretation

On analysing practice nurses' views on spirometry assessment and interpretation, there was a wide range of reported responses. The majority of practice nurses (twenty-one: 22%) reported that spirometry is an essential tool for COPD chronic disease management, with sixteen (15%) reporting that they were enthusiastic and motivated about COPD care and spirometry. Eight (9%) practice nurses reported that spirometry was essential for pharmacological management, while nine (10%) reported that spirometry had changed their clinical practice for the better. Six (16%) practice nurses reported that they wanted to become more skilled with spirometry assessment and interpretation. This was in contrast to three (3%) practice nurses who reported that spirometry is considered to be an additional unwelcome tool for clinical practice and six (6%) who reported that they felt overwhelmed with spirometry in general. Two (2%) practice nurses reported that spirometry put them off COPD care (Figure 5.8).

Figure 5.8 Practice Nurses' Views on Spirometry Assessment and Interpretation



5.2.9 Summary of Findings

Confidence in undertaking the spirometric procedure was variable with a third of participants lacking confidence. The greatest perceived barriers to the spirometric procedure were reported as lack of clinical time, followed by lack of training and lack of GP support. Practice nurses identified that they would like more external training to improve confidence in the spirometric procedure, followed by more clinical time and more GP support.

Role diversity within practice nursing was demonstrated by only 60% of practice nurses reporting that they interpreted spirometric traces. Lack of training was the greatest identified reason for lack of confidence in spirometric interpretation, followed by lack of clinical time and lack of GP support. Identified needs to improve confidence with interpretation of the spirometric trace were reported as more external training, followed by more GP support and more clinical time.

The majority of practice nurses (88%) undertaking spirometry assessment/interpretation, reported that they used the national guidelines to support them in clinical practice. A range of

other support mechanisms, such as GP support and UHB Guidelines, were also identified. However, the majority of practice nurses (64%) reported that they considered guidance/support mechanisms to be only moderately or slightly helpful in clinical practice.

A wide range of training, from one-day to degree level, was illustrated. Greater confidence levels in both spirometry assessment and interpretation were expressed by practice nurses after undergoing training of three days or longer, with practice nurses who had been employed for ten years or less reporting higher levels of confidence with both the procedure and interpretation. Practice population size did not appear to have any relationship to confidence in spirometry assessment and interpretation. Finally, a range of perceptions about spirometry were reported. Practice nurses predominantly regarded spirometry as an essential tool for COPD chronic disease management. In contrast, however, less favourable opinions of spirometry as being off-putting for COPD care and an unwelcome tool for clinical practice were given.

Reflexive note

I was concerned about the level of objectivity in the research process, with my power as researcher being greater than the practice nurses' as I had devised the questionnaire. I thought about this a great deal but then reconciled my negative thoughts to the fact that actually I had disseminated information throughout the UHB, raised the profile of COPD, and shared my work with all the practice nurses offering a COPD service, highlighting and raising the profile of COPD as a hidden disease in the process. The practice nurses' voices had been heard, as they had chosen to respond or not respond to my questionnaire; therefore, they had collectively exercised choice.

Descriptive data on the diversity in views and attitudes to spirometry assessment had been achieved, resulting in the barriers and attitudes towards spirometry being documented. Although the response rate from the questionnaire was low, it provided wide coverage to a difficult-to-access, oppressed group and resulted in practice nurses who would potentially not have responded to the request for the qualitative strand providing responses to questions. This descriptive documentation could therefore be used in the future to compare with other data on practice nurses and spirometry, to determine whether improvements have been made in COPD service provision.

As a direct result, debate could be enhanced, as numbers participating in the study were increased, resulting in greater representation of the practice nurses' voice. I therefore felt that

uncertainties raised about the use of the questionnaire were outweighed by the positives gained in using this method, as it enhanced and added credence to the research.

5.3 Section Two: Qualitative Data

5.3.1 Introduction and Qualitative Objectives.

This section will introduce the reader to the **qualitative** findings on practice nurses' views on barriers to accurate spirometry assessment and interpretation in primary care, followed by discussion of the results. Participants' names have been changed throughout to protect anonymity.

A considered decision was also made regarding the rigour and validity of analysed data. At the time of interview, all the practice nurses were offered the opportunity to read their transcribed interviews prior to analysis, my feeling that this was an honest, transparent way of sharing the power balances within the research process. I felt that this was more appropriate than an iterative member checking of summaries of the findings after data analysis. Gatenby and Humphries (2000) discuss the challenges of keeping check on researcher/participant power but then describe how draft papers were often returned with no comments, and that participants listened to them as the "experts" at sense-making. Interestingly, my experience was similar in that none of the practice nurses expressed a wish to view their transcribed data at interview, or contacted me after the interview to request viewing of the transcribed interviews. Arguably, this is a grey area and I accept that there is no "correct" answer or solution but I felt I had made the right decision in offering the practice nurses the opportunity to view their interviews prior to analysis. However, it has to be acknowledged that I do not know what such an approach would have yielded.

The objectives of the **qualitative** strand were to present the analysis of the transcripts by:

1. Identifying themes and sub themes within the transcripts
2. Presenting examples of those themes and sub themes from the transcripts

5.3.2 The Analysis Method Framework

Themes were identified by utilisation of the analysis method framework (Ritchie et al, 2003a). The rationale for the use of the analysis method framework method was that it provided clear steps to follow and produced structured output of summarised data (Gale et al, 2013). Criticism

has been voiced of the framework method for the systematic approach and conflation as a deductive approach to qualitative analysis (Pope and Mays, 2009). However, according to Gale et al (2013), the framework tool has no allegiance to either deductive or inductive thematic analysis but instead can be adapted for use with inductive, deductive or combined types of qualitative analysis. I therefore decided that the tool was relevant and flexible for my data analysis.

In summary, the seven stages of the procedure for analysis utilising the analysis framework method (Ritchie et al, 2003a) are as follows:

1. Transcription
2. Familiarisation with the interview
3. Coding
4. Developing a working analytical framework
5. Applying the analytical framework
6. Charting data into the framework matrix
7. Interpreting the data

Reading and listening to the recordings and also cross-referencing reflective notes that I had made immediately after each individual interview enabled me to immerse myself in the data. This was a challenging stage, as there was so much data from the nine practice nurses that it was initially overwhelming. Gale et al (2013) highlight the importance of looking out for the unexpected in inductive coding to challenge the developing analysis and to make the analysis stronger by reconciling and explaining anomalies in the data. I feel that I managed to achieve this, as I was ultimately able to identify an unexpected theme of health care assistants undertaking spirometry assessment that I had not considered at all prior to data collection.

Labelling and grouping together of the main categories and classification of the categories as main themes was undertaken, using a conceptual framework or “index” (Ritchie et al, 2003a: p. 221). Sub-themes were identified and highlighted with coloured pens. However, I did not expect to find many overlapping sub-themes such as professional isolation and lack of team support, and had not realised the degree of overlap until the subtopics were highlighted with the colours. I devised tabled diagrams as a working analytical framework for visual conceptual clarity, but with so many overlapping sub-themes and indexes under each main theme heading, the analysis lost focus, resulting in the tabled diagrams at best resembling a shortened version of the transcribed interviews. To provide a better structure, I applied an analytic hierarchy to sort the data by theme and concept, refine categories, classify the data and assign meaning to the data. Spencer et al (2003: p. 213) describe the “analytic hierarchy” as a form of “conceptual scaffolding”, describing how

> The analytic hierarchy is shown with ladders linking the platforms, enabling movement up and down the structure. As categories are refined, there is a constant need to revisit the original or synthesised data to search for new clues, to check assumptions or identify underlying factors.

This iterative process throughout analysis enabled me to refine the practice nurses' accounts and assign data to the themes to portray meaning. I followed the colour coding system from the main themes I had identified and used coloured pencils to group and identify data into individual categories associated with the main theme heading. The iterative process of the analytical hierarchy enabled me to "look down" (Spencer et al, 2003: p. 213) on what was emerging and to reflect on how much sense the analysis was making in terms of representing practice nurses' views on (any) barriers to accurate spirometry assessment and interpretation in general practice. I was thus able to apply the analytical framework and chart the data into the framework matrix (Ritchie et al, 2003a).

Gale et al (2013: p.5) describe good charting as requiring:

> An ability to strike a balance between reducing the data on the one hand and retaining the original meanings and "feel" of the interviewees' words on the other

I have attempted, with the use of short sentences, to allow each practice nurse's voice to be heard within their own subjective frame and language, inclusive of the drawing of attention to contradictory data or empty cells. However, the empty cells do not necessarily signify that the practice nurses had nothing to contribute to the theme. Ritchie et al (2003a) describe how the process of writing a summarised account begins to trigger insights into, or questions about the data that will lead to the later interpretive stages of analysis, and how lines of inquiry begin to emerge by the intense working through the raw data. This was my experience but I also came to the realisation that following analysis, there were comments or inferences made by the practice nurses that I realised I should have explored in greater depth. This left me with my own questions and a sense of frustration that I had missed opportunities for data collection, resulting in a desire to repeat the interviews again. A worked example of how the interviews were analysed is given in appendix nine.

After the process of reading and rereading the transcripts, the themes of confidence and competence with spirometry; training undertaken and role in spirometry; disenfranchisement; power dynamics and the gendered organisation were identified. The overarching concept underpinning the four themes being that of oppression, with the acceptance of the status quo and power of authority being as normal by practice nurses. Young (2000, p.42), describes oppression as:

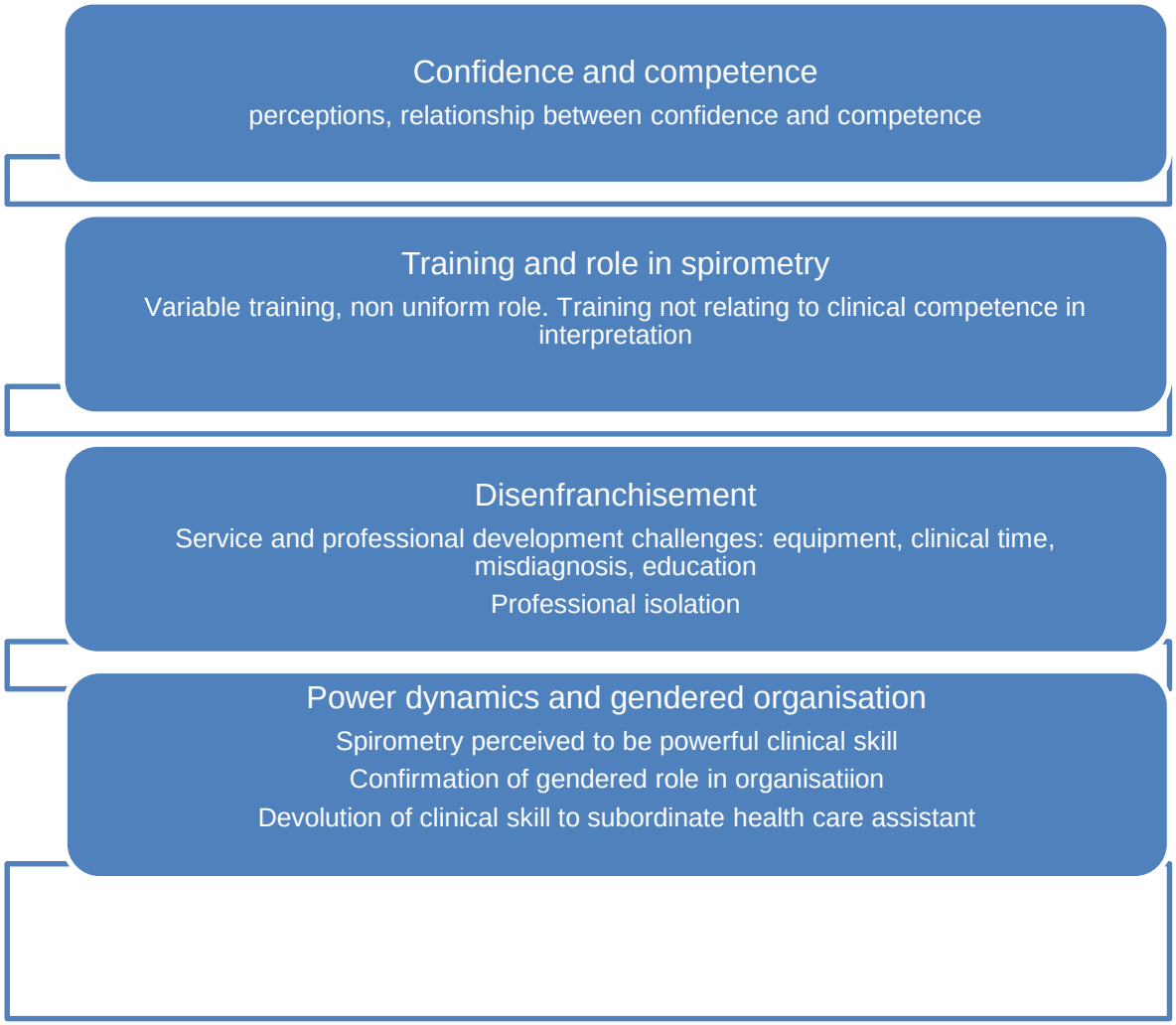
> A structural phenomena that immobilize or diminish a group

Further, Young (2000, p. 41) believes that oppression is structural because it is:

> Embedded in unquestioned norms, habits and symbols, in the assumptions underlying institutional rules and the collective consequences of following those rules

DeMarco and Roberts (2003) state how learned oppressed group behaviour, such as feelings of powerlessness, frustration and inability to assert oneself and inability to support one another, result in an environment charged with conflict that reinforces each individual's reliance on self alone. In addition, the outcomes of an oppressed culture in nursing can include poor quality of care with compromised patient safety and unnecessary expense (Olender-Russo, 2009). This being particularly relevant to the themes of competence and confidence in spirometry as a clinical skill, training and role in spirometry, and the feelings of disenfranchisement.

Table 6.1 below demonstrates the four inter-related main themes and subthemes:



The four main themes and subthemes therefore enable the practice nurse voice to be presented and heard, and the "exploitation, marginalization and powerlessness" (Young, 2000, p. 40) of practice nurses to be demonstrated.

5.3.3 Data Summary

The data has been summarised into four themes and nine sub-themes to provide an audit trail from raw data to final themes.

i) Confidence and Competence with Spirometry

	Confidence	Competence	Confidence & competence relationship
Ann	I am confident to think I have enough knowledge and experience to confidently make a sound diagnosis	I have enough knowledge and if I wasn't 100% sure then I would definitely get help from somebody	
Tina	I am fairly confident. I do the spirometry in a fairly competent manner	In order to be competent you have to have the confidence that you know what you are doing	
Chris		I like to think so after all these years of doing it but I do worry after all these years after working singly	They are two different things, they co-exist. I don't think you should be complacent (that's another "C" isn't it?)
Nicola	It's nice to have a bit of control and satisfaction because you know you are doing it properly	One has to be clinically competent to do the spirometry but not to interpret	I don't think they match but If you have the clinical skills and you have got the knowledge and you are comfortable and competent then it's fine
Joanne		If you have the clinical skills, the knowledge and are comfortable and competent it's fine	Sometimes you can be over-confident but it doesn't mean you are competent
Sharon	I feel confident. Some people can feel confident and not really be competent although they may think they are Confidence is more of a subjective thing isn't it?		Other people could be completely competent but don't feel that confident in their abilities
Lisa	I have met some practitioners who are very confident but I wouldn't necessarily say they are competent		Sometimes there's a relationship but. I wouldn't say the two go together

The issues of confidence and competence was the second theme that arose from the analysis. On asking the practice nurses about self-assessment and reporting of confidence and perceptions of competence relating to spirometric assessment and interpretation, answers were varied or responses missing, as illustrated by the empty cells. However, as the interviews were semi-structured, some of the empty cells were not because answers were withheld but rather that direct questions were not asked, as the interview was following a different pathway. Practice nurses in general, however, recognised the subjectivity of confidence:

> I feel confident. Some people can feel confident and not really be competent although they may think they are and other people could be completely competent but don't feel that confident in their abilities. Confidence is more of a subjective thing isn't it? (Sharon)

> I have met some practitioners who are very confident but wouldn't necessarily say they are competent (Lisa)

This was in complete contrast to another practice nurse, who when asked about her views of confidence relating to spirometry, appeared very confident stating:

> It's nice to have a bit of control and satisfaction because you know you are doing it properly (Nicola)

The concept of competence generated some interesting responses and was suggestive that competence in spirometry assessment was associated with knowledge:

> I have enough knowledge and experience with interpretation and if I wasn't 100% sure then I would definitely get some help off somebody (Ann)

> In order to be competent you have to have the confidence that you know what you are doing so I am fairly "confident" that the way in which I do the spirometry is in a fairly "confident" way otherwise I wouldn't do it (Tina)

> If you have the clinical skills, the knowledge and are comfortable and competent, then it's fine to undertake spirometry (Joanne)

When asked about the (if any) relationship between confidence and competence, opinions were mixed. The responses ranging from competence and competence being separate entities to there being a correlation between them. One nurse introduced the notion of complacency as being a factor in the development of competence. There was general acknowledgment that they co-existed but were not co-dependent:

> I think they co-exist, absolutely, they have to co-exist and I don't think you should ever become complacent (that's another C, isn't it?) but I am thinking I just keep wanting to learn and just keep bettering myself all the time. You can be competent at something but you shouldn't be overly confident...competence and confidence are two different things aren't they...from my point of view, yes, after all the years of doing it, I have acquired, I'm sure, the competence to do what I do, I am you know 99.9% sure that I am competent to do it. When I first

> started doing it, no, I didn't have the confidence, I definitely didn't, but as time has moved on I think I have gained the competence (Chris)
>
> I have always found that actually the more knowledge you get, sometimes the more unsure you can become because you realise how many different areas can go wrong... for me I would say there's probably a bit more of a correlation as my confidence increased then perhaps I was more competent with that. It was as the two were coming together as my knowledge was coming together from the training... I don't believe though that they always correlate (Lisa)
>
> Sometimes you can be over confident but this does not mean you are competent. Sometimes you can get a bit carried away with what you are trying to do … that's when I get a bit nervous actually because if the trace doesn't look like asthma or COPD I think where do we go from here (Joanne)

These were interesting answers when contextualised within the isolated working environment of the practice nurse, suggesting that there was an awareness of professional accountability in clinical practice. This was highlighted by one practice nurse, who was the only interviewee to mention formal assessment of competency in clinical practice:

> I have never been formally assessed doing it, not has there ever been any indication that I need to be assessed to do it. They (doctors) should be more aware that I am not assessed as competent (Tina)

ii) Training undertaken and role in Spirometry

	Training undertaken	Role in spirometry
Ann	We have done lots of training on spirometry and COPD. I have different diplomas and am qualified to degree level	I am involved in the all-round care from diagnosis to management
Tina	I have done spirometry training days and updates	I do spirometry but not interpreting
Chris	COPD diploma	I undertake spirometry but not so much interpreting
Nicola	Maintaining Respiratory Health Diploma then a two-day spirometry course	I do spirometry and interpret to the best of my ability
Joanne	Experience and in-house training	I do not do the spirometry but do interpret it.
Sharon	Maintaining Respiratory Heath Diploma, one-day spirometry training and in-house mentoring (drug company)	I do the spirometry and read it on a basic level
Lisa	In-house training (GP)	I do the spirometry only

Diane	Two-day spirometry course and in-house support (GP)	I do the spirometry only, I look at the trace but do not interpret it
Carys	Maintaining Respiratory Heath course, external clinic experience.	I do the spirometry and yes and no interpret

The training the practice that nurses have undergone is presented as the first theme to illustrate the contribution to the **qualitative** strand from practice nurses who have reported a wide range of' training and clinical abilities in undertaking the spirometric procedure and interpretation. All the practice nurses were open and confident about stating their qualifications or training undertaken for spirometry assessment which varied considerably:

> I did the Maintaining Respiratory Health Course in approximately 2006/7, where I did some spirometry on the course. Then about a year later I went on a two day spirometry course. I am the lead nurse in the practice I work in for COPD and asthma so I undertake the spirometry for COPD yearly and undertake spirometry for diagnosing asthma. I interpret the results to the best of my ability, sometimes using the GPs and other literature for back up (Nicola)
>
> The GP who is responsible for the COPD and spirometry gave me a brief induction, decided to give me some training, gave me all the literature and talked through spirometry with me (Lisa).
>
> In 2002 I undertook and asthma and respiratory course at ******* although we didn't do a lot with spirometry. I have done some sessions with reps many years ago, gosh, must be about twelve years ago to learn basic spirometry. I don't know how many years ago now but a nurse came out from the community respiratory team, to run a COPD clinic with me so I could learn from her. She showed me about spirometry and explained the results and what you are looking for and so forth. I have been looking after asthma and COPD for a long time, I have been in practice sixteen years and probably doing respiratory for about ten (Joanne).

However, the practice nurses were not as confident in responding to the question about whether they interpreted the spirometric trace. With the exceptions of Ann and Joanne, who provided quick, confident responses, other practice nurses seemed hesitant and vague in their responses, expanding their answers to focus on areas they were more confident in talking about, such as national guidance on recommendations for spirometry assessment, rather than focus on their ability to interpret the spirometric trace. It was also interesting that there did not appear to be a correlation with the amount of training undertaken and the practice nurses' ability to interpret spirometry. For example Chris had trained to diploma level in the management of COPD and Sharon and Carys had undertaken the diploma level Maintaining Respiratory Health course; both courses inclusive of diploma level spirometry training. However, none of the three practice nurses confidently stated they interpreted spirometry readings:

> I undertake spirometry but not so much interpreting (Chris)
>
> I do the spirometry and read it on a very basic level. I know what to look out for with the readings and the ratio but that's where my knowledge ends. Further than that I'm a little bit lost. A basic level, yes. (Sharon)
>
> I do the spirometry and yes and no interpret. It depends on how difficult the trace is when I look at it (Carys)

Overall, the practice nurses freely expressed a range of opinions on their personal beliefs about spirometry as an assessment and diagnostic tool for the chronic disease management of COPD. Although the majority of views were positive, Joanne expressed negative views towards spirometry in a flat monotone, and really did give me the impression that spirometry was a problem for her in her workplace, as she repeatedly introduced the subject of spirometry for diagnostic purposes throughout her interview, which was not a subject area I was asking the practice nurses about. My reflexive diary commented on the fact that she had wanted to come to my workplace for the interview and she appeared uncomfortable throughout the interview, providing closed answers with an unwillingness to expand on her responses. However, she did give me the impression that she welcomed the opportunity to share her negative opinions, which had possibly not been aired before:

> It is useful as long as the person can do it correctly, otherwise it's absolutely pointless... it's a bit task oriented though, isn't it, as to diagnose somebody you have to have reversibility for asthma and you have to show there is no reversibility for COPD. It's not just about that though, it's about the person who's sat in front of you (Joanne)

All the practice nurses stated that their organisations valued spirometry as an assessment tool for the chronic disease management of COPD. It was during and after analysis that I realised I should have explored these responses in greater depth to try and understand why their organisations appeared to collectively value spirometry, yet paradoxically, mixed opinions were expressed on the positive and negative aspects to the tool by the practice nurses who were, after all, undertaking the procedure. This left me with more questions and a sense of dissatisfaction that I had not explored these responses in full and could have potentially missed out on the collection of raw data that could have enhanced the **qualitative** discussion.

iii) Feeling Disenfranchised

	Service and professional development	Professional isolation
Ann	Difficult to get authorisation for study leave, updates taken in own time	Nobody around to approach We rarely get any GP involvement with interpretation, I don't think anyone other than the nurses would be able to use the spirometer

Tina	Standard of equipment, never been assessed as being competent.	There is no one particular lead. We are trying to get some formality. We are trying to pull it together a bit now
Chris	Lack of clinical time Sometimes I think it would be nice for some of the GPs to go on the training I have gone on	I work singly. I have a kind of lead GP but in the beginning I was under the impression she was just as much in the dark as me
Nicola	Misdiagnosis	I have had to learn, as there wasn't the expertise within the practice from a GP or nursing point of view I don't feel I know enough
Sharon	Old equipment Time restrictive	Varied understanding amongst colleagues; amongst the nurses there is a lot of confusion
Lisa	Cannot access external training Timing of clinics and appointments	In the beginning I felt very isolated. Nothing as good as getting together sharing ideas but this doesn't happen in this job
Diane	Educational updates Misdiagnosis Out of date equipment Time to do the procedure	GP availability is a problem It was daunting at the beginning as I didn't feel I had any support. The GP has learned a lot more now and she is much better at the role but she's not always here when I am here

Professional disenfranchisement within the general practice environment appeared to be a theme that that was pervasive throughout all the interviews. The theme has been presented using two sub themes: service and professional development, and professional isolation, to present the practice nurses voicing the difficulties they faced in the provision of a spirometry service for the chronic disease management of COPD.

a) Service and professional development

i) <u>Equipment</u>

Some of the practice nurses expressed frustration at their inability to develop spirometry services due to the poor standard of spirometers they were using. There appeared to be an acceptance of using old or faulty equipment in clinical practice with lack of consultation with GPs about the need for replacement equipment. None of the practice nurses mentioned whether they had requested the purchase of new equipment or raised the subject of sub-standard equipment with their GP employers. Following data analysis, this would have been a useful question to have asked, which could have possibly given a further insight into working conditions:

> We have a dreadful spirometer machine. I think because the doctors don't use it they have no idea what it is like trying to work with a spirometer when the battery doesn't work and then the plug doesn't work. You do have to put in the data properly and then if it doesn't save... I think my experience is the doctors just think you do it and blow into a machine (Tina)
>
> The machine we have got here is a nice up-to-date one, which helps, but the one in the other site is an older one and doesn't store the data very well and doesn't give a ratio, so I have to work that out manually. I think at some point we are going to need a more up-to-date one at that site (Sharon)
>
> The machine we have is an old one and out of date. It's actually got the old guidelines on as well so it will say moderate (disease) when it's severe (disease) so I have to adjust every one that I take which is time consuming (Diane)

ii) Clinical time

Lack of clinical time was also stated as a problem for some of the practice nurses. Carys, for example, mentioned repeatedly throughout her interview how time consuming spirometry was, and the subsequent knock-on effect of running behind on her appointments:

> If it's not successful spirometry and I'm having to keep going and I'm taking time to explain to them, I can get very aware that I am running late into the appointments and sometimes it can be a problem. It makes me feel under pressure and I can get hassled then (Carys)

On being asked if she had made any efforts had been made to address appointment times, Carys changed the subject whilst laughing, explaining how she tried not to become frustrated with the patients.

Other comments regarding time constraints were interesting and concerned the organisation as a whole. Again, the practice nurses did not appear to have control over their time and appeared to accept that time constraints were a norm that could not be changed within their clinical practice. Following analysis, it would have been useful to have asked more questions to try and gain an understanding of the ready acceptance to time pressures and factors that wasted their clinical time, which in turn appeared to affect their communication within the team:

> It doesn't matter how many times you tell people, you still get people ring up our receptionists who will book the patients in and when they come in they have a chest infection and you have to send them away again. So there is a lot of wasted time I find on it. The equipment is expensive stuff and again it's the cleaning and the time afterwards to have allocated to know that I need to finish this and straight away I'm back onto another one. I have no time allocated to clean up and sort out afterwards before the next patient, and sort out after doing the clinics and things. I tend to do all that in my own time. Don't get me wrong, I'm not after extra time because sometimes you get a failed appointment and you can use that time to do it. So I think to input every little aspect leads to a

> lot of wasted time because you don't know if someone's going to come or not. Do you see what I mean? I mean it's people and we don't know what people are going to do, do we? (Diane)
>
> I work with one of the GPs as a kind of lead GP and she and I will go through things …sometimes it's a problem with time and they're so busy we don't get the time I would like. I just have to deal with it and find an appropriate time to go in and that's why they are on my desk here, waiting to discuss. I can do them, scan them and could e-mail them to her but I do like to discuss, I just feel that's my role (Chris)

Other practice nurses, however, had recognised that clinical time was a barrier to undertaking spirometry assessment and appeared to have been more empowered in addressing time constraints. This demonstrating that not all of the practice nurses were accepting clinical practice constraints and had the ability to effect change within their organisations:

> I'm very lucky actually because I get to choose my own appointment times. I can have as long as I like for spirometry. If a GP refers a patient for a ten minute spirometry, well I can say 'no, that's not enough time'. I don't have any pressures on my time so I have no pressures on the patient's time, which helps in using the spirometry (Tina)
>
> Initially I was given ten to fifteen minutes and I said that was unacceptable. I didn't take that time, I took as long as was required and was safe, as I would never push a patient... there is no way I would rush them so they would learn I wasn't going to take that ten to fifteen minute block, especially not for their annual review as well, and now I have the time I need (Lisa)

iii) <u>Misdiagnosis</u>

Two of the practice nurses stated that they had encountered patients who had been diagnosed as having COPD and voiced their frustration at providing the chronic disease management service for patients who they felt did not have the disease. This factor demonstrating a lack of understanding of spirometry within the wider team which in turn affected care that was inappropriately given:

> I know they (GPs) look at the numbers because my colleagues will send their spirometry's to them, but whether they look at the traces as well, I find doubtful… and yes, I have picked up a couple I suppose during the last few years which perhaps weren't COPD but were diagnosed as COPD. This can make you feel frustrated (Nicola)
>
> Well Dr X has now taken the lead, but if one of the other doctors look at it I'm not sure that all the doctors are treating people appropriately after that either and interpreting. Sometimes you think… you see who has asked for it and if it's going back and you think, well, they will end up on the COPD register when they are not COPD patients. I just think sometimes it's a bit disheartening (Diane)

On being asked what, if any attempts had been made to review the spirometry and recode the diagnosis other than COPD, neither of the practice nurses gave direct answers. There appeared to be acceptance of the miscoding, inability to communicate with the multi-disciplinary team and lack of ability to change care pathways to treat patients according to a correct diagnosis:

> Well you know, I have a couple of diabetics that were diagnosed as diabetic but weren't diabetic so these things happen sometimes. The practice I work in are lovely and they're great to work for but they are a frustrating practice to work for. They have been very forward thinking with me because I have pushed but every other aspect in the practice isn't forward thinking at all (Nicola)

> Well it's just back in a circle then because I get them back again and then I refer onto Dr X and she says the same. It's a shame that colleagues don't ask her before they put them on. They tend to put too much emphasis on spirometry rather than use it as a tool, they're assessing the patient on the spirometry rather than the whole patient (Diane)

iv) Education

Almost all of the practice nurses voiced their dissatisfaction at the limited educational opportunities to update their knowledge and clinical skills in spirometry. Access to educational updates, when available, was a problem with several practice nurses voicing their frustration that clinical updates were often undertaken in their own time. Existing training or educational opportunities appearing to be ad hoc, informal and associated with the pharmaceutical industry. This factor having connotations for the influencing of prescribing decisions in clinical practice:

> The doctors do feel that we should be updated but it is a different story getting the time to go on the updates. In know this year in particular, there have been several updates for various things and it's not easy to get the authorisation for the leave so a lot of these updates are being taken in our own time (Ann)

> When I started I identified that I wanted more training; there wasn't actually anything I could access at the point of starting the role so I got in touch with reps because they have an online e-learning for spirometry which kind of helped. I identified in the future that I would like more training but my biggest stumbling block is that they need me there five days a week and it is very busy and I am the only practice nurse there. They haven't indicated as such I can't do training but I don't honestly feel I can access any at the moment (Lisa)

> I do go to anything that is put on by the respiratory reps in the evenings to try and keep it up but I would like formal updates and I think it would help to keep going over and refreshing and hearing on a formal basis rather than... I mean I do go to every one up there but I think I am the only one in the practice that does go to regular updates in the evenings on the unpaid informal things (Diane)

b) Professional isolation

Professional isolation was a theme that all the practice nurses referred to. This was interesting as professional isolation was described by all the practice nurses, irrespective of them working as single practitioners or within larger nursing teams:

> When I do get something that is slightly more difficult, then it does put me in a dilemma in terms of what treatment to use…with the interpretation, just having someone to band ideas around with, more for mixed disease than anything else would be welcome…it's nice to have a little bit of support from someone but there isn't anyone there. It would be nice to have a little more GP support (Ann)

> I work singly. My colleague is a specialist nurse in diabetes so we have these two separate roles. There isn't anyone who really understands to go to as my kind of lead GP, well at the beginning was just as much in the dark as me. I try and meet people networking at meetings and things like that but it's difficult (Chris)

> I was on my own from the start so I have had to grow. I've had to read and I've had to learn because there wasn't the expertise within the practice as far as chronic disease goes from a GP point of view, you know, for the support. I don't feel I know enough (Nicola)

> In the beginning I felt very isolated. It was daunting. You are always sort of aware that especially as a lone nurse there isn't any backup in that respect. You know, when nurses get together and share how they work I think that's very valuable. You know there are methods of learning on line but I don't think that is anywhere near as good as actually getting together sharing ideas and quite often you mention you have come across obstacles and other nurses will say "well this is how we deal with it" or "this is how we tackle it" and it can really improve your personal practice, that is, networking with colleagues to not be in isolation. This doesn't happen in this job though (Lisa)

Sharon was the only practice nurse who worked within a large team of nurses, and whose colleagues also undertook spirometry assessment for COPD management. She described how she perceived spirometry to be a clinical skill that lay within the nurses' domain, but then also talked about the varied understanding amongst nursing colleagues which resulted in confusion in clinical practice. This also suggested professional isolation within the nursing team itself:

> There is varied understanding amongst my colleagues... I think we really need time to get together and chat about it and share our knowledge so that we are all doing the same thing and we are all on the same page. I think again with the nurses there is a lot of confusion around COPD checks and diagnostic spirometry and getting their heads around the two... but it's more of a nurse's domain to be honest. That's why when I do a spirometry myself, I always look at the results and I go to the doctor with the print-out and tell them what I want really because they do value the nurses' opinions and they do realise we are better trained in spirometry (Sharon)

On being asked what, if any attempts had been made to reduce professional isolation, the responses varied with some practice nurses describing how they were trying to improve team working, other indirect answers were given, with practice nurses stating what they would like as opposed to what attempts they had made to reduce isolation in practice. There appeared to be recognition that team working with GPs was needed but again, there appeared to be acceptance of existing structures within general practice, and inability to effect change:

> It would be nice to have in the same way that the diabetic nurse here has had a lead diabetic GP, it would be nice for me to have that with respiratory. It would almost be like a comfort blanket but you know I don't feel put off by that (Ann)

> There is no one particular lead. There is one GP I refer all the spirometry onto but that doesn't mean he has seen them before. We are trying to get some formality and some proper care because I feel that if he is aware of them, then I can work better with him in the future. We are trying to pull it together a bit now but it is not working that well (Tina)

> I didn't feel I had any support in the beginning which was daunting so I felt very isolated as the GP was taking on a new clinical role as well so I found that she was learning. In the beginning I think we were helping each other rather than me getting any support…between us now it's not too bad but she's not always here when I am here and I want more allocated time to discuss patients when she is here (Diane)

All the practice nurses, without prompting, were able to voice what they wanted for reducing professional isolation in clinical practice and developing spirometry services in the future practice. Service development needs ranging from more training and mentoring to mandatory regular updates and national standards of training were voiced. This suggested that practice nurses recognised they were isolated and also that they needed regular clinical updates for spirometry to promote on going competency:

> A sort of update every eighteen months or two yearly, doing the diploma was eight years ago so I feel there should be something that we could use to assess on-going competency (Chris)

> A respiratory lead within your practice that's a medical respiratory lead, then you know you would have somebody to go to rather than relying on your own reading and you know, referring into secondary care and in some cases you know, passing the buck a bit (Nicola)

> To have a GP next to me saying "yes that's right, what you have said is right, yes you have made the correct reading from it", also if there's anything that's unclear, to have them explain it there and then... more mentoring I think would help improve my confidence (Carys)

> Maybe if things (training) were mandatory and bought in, like UHB protected educational time where surgeries are closed in the afternoons, maybe slotting in one- to two-hour sessions then, that might be a good idea (Ann)

More regular updates in spirometry and not just looking at the straightforward, but in a smaller group. I think there was probably about twelve of us when I did the respiratory course and that was nice as we were a very friendly group and we all got a lot from it and there wasn't any time at all that when I felt I couldn't ask a question (Carys)

iv) Power Dynamics and the Gendered Organisation

	Practice Nurse	General practice team
Ann	I don't think anyone other than the nurses would be able to use the spirometer, it's very much in the nursing domain in this practice	If I needed help I would probably contact one of the Consultant respiratory physicians as opposed to one of my GPs, the click of a button is easier It would be nice to have a little more GP support and a GP who could attend some mandatory training
Chris	I think the practice nurse is valued regarding spirometry. That is my role and that is what I am paid to do	Some of the GPs are keen on it and others have no idea at all.
Tina	It's nice to have a bit of control and satisfaction because you know you are doing it properly	I'm quite happy as I am left to get on with it and that's nice for myself. The GPs do come to me for answers but I am not 100% sure I am doing it properly… I am not sure how much understanding the GPs have of spirometry
Nicola	Spirometry had made me grow more as a clinician as I have been on my own from the start I have had to grow	Sometimes the GPs can't realise the limits of the procedure. They don't have a lot of ability to interpret. If I say "I think this or I think it's that" they will support me. If I say I don't know what it is" they will say refer to secondary care
Joanne	If I am not comfortable I will speak to someone else but generally I have got all the tools that I need to be able to assess (the trace)	The GPs do not get updated and I think if they are not sure then they look up to me
Sharon	I think it's more of a nurses' domain to be honest. It gives me some pride in my work to know it is something that I own	It doesn't frustrate me that the GPs don't read spirometry as I am happy doing it and as long as I have a GP to go to (and they are all very approachable) and they always say "yes" then it's fine.
Carys		If we do spirometry we often discuss results amongst the team, also with the nurses too

Power dynamics within the general practice was an interesting theme on analysis. There were contradictory opinions expressed by the practice nurses, suggesting that although practice nurses were aware that they were gaining recognition in the developing of clinical expertise

with spirometry, they were uncertain of their roles within general practice teams, also that team working varied from practice to practice. The gendered general practice environment was synonymous with power dynamics but has been presented separately to contrast with the contradictory statements regarding power dynamics.

a) Power Dynamics

i) Practice nurses

The practice nurses stated their pride and satisfaction at spirometry being a clinical skill that was within the nursing domain:

> I don't think anyone other than the nurses would be able to use the spirometry. It's very much in the nursing domain in this practice (Ann)
>
> It's nice to have a bit of control and satisfaction because you know you are doing it properly (Tina)
>
> Spirometry had made me grow more as a clinician as I have been on my own from the start I have had to grow (Nicola)
>
> I think it's more of a nurses domain to be honest It gives me some pride in my work to know it is something that I own (Sharon)
>
> The GPs do not get updated and I think if they are not sure then they look up to me (Joanne)

However, contradictory views were voiced, with uncertainty of their individual knowledge and expertise. This suggesting confidence was lacking in clinical practice:

> I'm quite happy as I am left to get on with it and that's nice for myself. The GPs do come to me for answers but I am not 100% sure that I am doing it properly… I am not sure how much understanding the GPs have of spirometry (Tina)
>
> It doesn't frustrate me that the GPs don't read spirometry as I am happy doing it and as long as I have a GP to go to and they always say "yes" then that's fine. If they don't say "yes" I have a problem in working out what to do (Sharon)

Confidence in team members also seemed to be lacking as two of the practice nurses stated without hesitation that they did not involve the GPs at all, but instead referred the more difficult patients straight into secondary care. This did suggest lack of team working and inability to develop services as a multidisciplinary team:

> It would be nice to have a little more GP support and a GP who could attend some mandatory training but if I needed help I would probably contact one of the consultant respiratory physicians as opposed to one of my GPs; the click of a button is easier (Ann)

> The GPs don't have a lot of ability to interpret. Occasionally I will ask them for help but normally what happens now if I am stuck then I will refer. I'm supported in that they support what I say. If I say "I think this or I think it's that" they will support me. If I say I don't know what it is" they will say refer to secondary care (Nicola)

Two of the practice nurses however, described how they did work closely with other team members and expressed satisfaction with their multidisciplinary team working. This demonstrated the variability in team working and communication within the general practice environment:

> If we do spirometry, we often discuss results amongst the team, also with the nurses too (Carys)

> My clinical lead keeps herself up to date. She very much vales making sure that when I have assessed the patients coming in that I have done everything properly. I quite often flag up to her you know that this one might be worth doing spirometry on and she is like "great bring them in", so informally we are team working (Lisa)

b) Gendered organisation

This subtheme was not immediately apparent, but was identified on data analysis. The practice nurses expressed views that confirmed their sense of gendered identity within the general practice organisation. Cultural issues of the gendered patriarchal organisation were also raised, with practice nurses describing their place within the gendered hierarchy of general practice:

> Not interpreting the spirometry but giving the doctors a little bit of an idea by marking on the trace if it has improved or deteriorated you know. I don't always think they know as much as I do. I think the practice nurse is valued regarding spirometry. That is my role and is what I am paid to do (Chris)

> I am very lucky. I get to choose my own appointment times. I can have as long as I like for spirometry (Nicola)

> It's a nice feeling actually, to feel that you are trusted enough to be involved with spirometry (Joanne)

> I always look at the results and I go to the doctor with the print out and tell them what I want really. Because they do value the nurse's opinions and they do realise we are better trained in spirometry. The doctors are very approachable so if I have a question I go to them (Sharon)

It would have been useful to have explored this theme in greater depth had it been more apparent at the time of the interview. A greater, in-depth exploration of the practice nurse role within the gendered environment would have possibly identified what, if any, future changes

could be identified to raise the practice nurse profile within the gendered hierarchical organisation and therefore develop and improve services in spirometry provision.

c) Health Care Assistants

The practice nurses were not asked about health care assistants undertaking spirometry assessment: therefore, as health care assistants were mentioned by six out of the nine practice nurses, this was unexpected. This added a new dimension to the analysis and discussion of results, as this data clearly had implications for future service development of spirometry services in general practice. The devolving and cascading of clinical skills within general practice teams, where knowledge of spirometry and lack of power in developing services was fragmented, having the potential to perpetuate further gender inequality and poor clinical care within organisations:

> We have HCAs we are training up to do spirometry and they are very good (Sharon)
>
> If we had more space here it might be reasonable to have a healthcare assistant... I suppose someone could come in and someone less senior to me could undertake the test and then I could pass on the results on if I felt it was necessary to the doctors. I could be that kind of go-between (Chris)
>
> You could say my expertise would be better off somewhere else if a healthcare assistant did the spirometry and then I just looked at the results (Nicola)
>
> We have trained our HCA up so the results go to the GP or they come to me (Joanne)
>
> I'd like a healthcare assistant to do it. Passing the buck and giving me the results to read (Carys)
>
> I's like a healthcare support worker to assist me when I do the clinics and to also do some spirometry as well (Lisa)

5.3.4 Summary of Results

Practice nurses expressed mixed views on the positive and negative aspects to spirometry in clinical practice. Conflicting views, however, were expressed on the levels and type of support and guidance offered by their different organisations in undertaking spirometric assessment/interpretation.

Barriers to the spirometric procedure and interpretation were expressed as clinical time, faulty, old equipment, lack of communication and clinical knowledge and inappropriate GP referrals for spirometry assessment. There were suggestions of GP uncertainty in spirometry

interpretation, affecting the accuracy of COPD disease registers, and also lack of GP interest towards patients with COPD. Other barriers were voiced as lack of team support and professional isolation. Difficulties in accessing education were also voiced.

Varying levels of confidence with the spirometric procedure/interpretation were expressed, with general consensus on the relationship, yet acknowledgment of the differences between the two concepts. Although a broad range of spirometric assessment/interpretation training had been undertaken by the practice nurses, it appeared that few, if any additional measures had been put in place to support and develop skills and knowledge. Mandatory training, regular updates and assessment of competency were identified as the main needs to improve skills and knowledge in spirometry assessment/interpretation.

Health care assistant support in undertaking the spirometric procedure was mentioned by several of the practice nurses. The concept of devolving the clinical skills of spirometry from practice nurses to HCAs having the potential to perpetuate further gender inequality within organisations with the diluting of the lack of knowledge and power within an area where knowledge of spirometry and power in developing services was already fragmented.

Reflexive note

I was conscious that throughout the process of analysis and presentation of results, I had analysed the data from my own personal and intellectual perspective, which had potential to affect data analysis and inaccurately represent the practice nurses' voices, as my voice, in theory, was the loudest. On drawing upon my personal knowledge of practice nursing, I am aware that the representation and analysis can only be mine and I have been in a privileged position of researcher. However, I made a conscious effort to understand the practice nurses' accounts and understandings of the barriers to spirometry assessment and interpretation from their perspective, which was so different from my experiences in clinical practice.

On asking the questions, listening to and exploring the responses, the interviews did reveal differences in opinions and experiences that I had not previously considered. This alone challenged me as a researcher in an unanticipated way, which ultimately eroded my "power" as researcher. An example of this was the emerging role of the health care assistant with spirometry, which was raised by several practice nurses.

My aims therefore were to be sensitive to the issues of power and control throughout the qualitative strand to fairly represent the practice nurses' voices, whilst respecting and valuing that not every voice had the same thoughts as me, yet each was valued for its contribution. In

short, there was no “norm” for shared experiences, yet the final presentation of the data was of my construction only.

Chapter 6 Discussion

This chapter will firstly introduce the reader to a discussion of the quantitative results, followed by discussion of the **qualitative** results. Each section will be structured around the three research aims detailed in Chapter One, and the quantitative and **qualitative** strand objectives to promote a clear structure and facilitate comparison of my data with theories outlined in Chapter Two. A third section will then develop theoretical implications that have arisen from the data collection and analysis.

As there had been a significant time lapse following the original literature review, the literature search was repeated in February 2016, in an attempt to find more up to date empirical data to compare with the research results. The literature search, inclusive of back chaining, isolating one publication only (QNI, 2016) that was relevant to practice nurses, training and spirometry.

6.1 Quantitative Discussion

6.1.1 To identify the confidence of practise nurses undertaking and interpreting spirometry and reasons for lack of confidence (Objectives 2&3)

Confidence and high levels of confidence in undertaking the spirometry procedure were in total reported by 66% of practice nurses. This indicates that confidence levels in undertaking the spirometry procedure continue to be a challenge for a third of practice nurses, despite the fact that for the past ten years, spirometry assessment has been an integral part of the chronic disease management care for COPD. Initial results therefore confirmed my hypothesis that practice nurses still lack confidence with spirometry as a procedure in clinical practice.

In comparison to the 58% of practices reporting confidence with the procedure in 2005 (Bolton et al, 2005), there is a small improvement, with 66% of practice nurses in the present study reporting that they felt confident or highly confident with the spirometric procedure. However, Bolton et al (2005), did not exclusively research practice nurses but practice nurses and GPs: therefore, comparison is limited. The majority of practice nurses (45%) reported the greatest perceived barriers in undertaking the spirometric procedure to be lack of clinical time, closely followed by lack of training and lack of GP support. Similar barriers were reported by Borg et al (2010), who, with the absence of statistical data, reported lack of support in the workplace and time allocated for testing as the two primary barriers to the procedure. This comparison

illustrates that the situation in primary care appears to be unchanged from 2005, when data was collected by Borg (2010).

A clearly identified need to improve confidence in undertaking the spirometry procedure was that of more external training, reported by 44% of practice nurses, followed by more clinical time and more GP support. This does illustrate that barriers to adequate training for the procedure, identified by Bolton et al (2005) White et al (2007), Borg, (2010), Upton et al (2007), QNI (2016), continue to be an issue in clinical practice. Upton et al (2007) did acknowledge that at the time of their data collection in 2006, training for COPD had only been available for ten years. I feel that these results reflect the lack of mandatory training for spirometry within Wales, highlighted initially by Bolton et al in 2005. However, as general practice is being successfully remunerated for spirometry target achievement regardless of the quality of spirometry, it is of no surprise that practice nurses are not receiving as much training as they would like. Criticism could therefore be levied at employing general practitioners for the failure to release practice nurses for training. However, on a wider scale, the Government could also be criticised for its failure in setting targets for achievement without incorporating standards for quality within these targets.

Reporting for spirometry interpretation illustrates practice nurses' role diversity within general practice nursing, with 60% of practice nurses undertaking interpretation of spirometric traces, demonstrating a more advanced level of professional development. This is only a small improvement in comparison to findings by Halpin et al (2007), who reported that 55% of their sample of thirty-three practice nurses stated that they were confident or very confident in interpreting the spirometric trace. My results therefore support my hypothesis that although it appears that practice nurses have made some advances in the development of skills with spirometry, this is only a small development, with practice nurses still having problems with spirometry interpretation in clinical practice.

The reported reasons for being less than highly confident in reporting the spirometric trace were slightly different to the reasons for lack of confidence in undertaking the procedure. The most frequently reported answer, given by 50% of practice nurses, was lack of training, followed by lack of clinical time and lack of GP support. This suggests that although practice nurses are reporting the spirometric traces, half the nurses have not been trained to a level at which they are highly confident with interpretation and training is again reported as a key issue. The identified need to improve confidence in spirometry interpretation was similar to the identified need to improve confidence in undertaking the procedure. The most frequently reported answer, reported by 45% of practice nurses, was again that more external training was needed, followed by more GP support, and more clinical time.

These results for both the spirometry procedure and interpretation infer that nurses are identifying that they are lacking training and that external training is not readily available or accessible, and are suggestive of the fact that they are working with some degree of isolation within primary care teams. This situation is unchanged from 2006, when data was collected and reported by Upton et al (2007). These factors mirror the subjective feedback I have had from practice nurses in Wales post-2004. In addition, questions are raised about the practice nurse's role and voice within the team in the control of workload and ability to effect change in clinical practice, with lack of clinical time being reported as a barrier to the spirometric procedure and its interpretation.

6.1.2 To ascertain what guidance or support exists for practice nurses when undertaking and interpreting routine annual spirometry screening for patients with diagnosed COPD and how useful are (any) existing support mechanisms (Objective 4)

It was no surprise to find that 88% of practice nurses undertaking spirometry assessment/interpretation used national guidelines for COPD as support in practice, as at the time of data collection, the national guidelines had been established for nine years and were widely promoted nationally as best practice. This result is comparable to the paper by Halpin et al (2007), who reported that 90% of their respondents (practice nurses and GPs) had awareness of national guidelines.

A range of support mechanisms was identified by practice nurses, nearly half of whom ticked more than one box. The most frequently reported answers were asking the GP for guidance (33%) or referring to UHB guidelines (26%), which suggest team working and use of local, as opposed to national guidelines. These responses were of no surprise as just prior to data collection, the UHB had financially incentivised general practices to undertake a large respiratory audit on prescribing inhaler devices for COPD chronic disease management, and had provided in-house and external training for practices to undertake the audit. Local guidance had therefore been widely publicised.

Clearly, resources for support are available in clinical practice. However, the practice nurses did not report favourable responses to the helpfulness of the support mechanisms in practice, with less than a third reporting that they considered the guidance/support mechanisms for spirometry assessment/interpretation to be very helpful or extremely helpful. Worryingly, two-thirds of practice nurses found guidance/support mechanisms to be only moderately or slightly helpful. This suggests disenfranchisement in team clinical knowledge and in the cascading and translation of guidelines/ clinical support to clinical practice. The results also suggest that

practice nurses were working as isolated practitioners within teams, without adequate support and guidance. This did confirm anecdotal feedback I had been receiving from practice nurses on difficulties in promoting best practice, with confusion around guidelines and what was considered best practice. The UHB guidelines promote an alternative, non-licensed, non-evidence-based prescribing algorithm, in contrast to the national guidance, resulting in confusion for all clinicians. This was interesting and, I felt, reflective of the isolated and fragmented nature of general practice employment, the lack of sharing of professional expertise within and between practices and mixed messages from the UHB on what was considered best practice, which was different to national guidance.

6.1.3 To articulate what processes/attempts are in place/have been made to address any existing barriers to accurate spirometry assessment and interpretation (Objective 5)

On determining the levels of training undertaken for spirometry assessment/interpretation, a range of answers were reported, from one day of training to in-house and degree level training. As more than one answer had been ticked, this was suggestive of professional development with spirometry assessment/interpretation. However, 95% of practice nurses reported having undertaken only a one-day or two-day basic training course: this suggests that only a minority of practice nurses have professionally developed and undertaken further training. The results are comparable to the findings of Bolton et al (2005), who reported a range of training for procedure and interpretation of 0-30 hours (median value four hours), with ten practices reporting no training at all for the procedure and thirteen reporting no training for interpretation. My questionnaire screened out practice nurses not reporting spirometry use: therefore, my sample was different. However, as 95% of the practice nurses had undertaken a one- or two-day training session, my results indicate that there has been more training for spirometry in primary care since 2003, when Bolton et al (2005) undertook their data collection.

This research did not assess the level at which the practice nurses were working (that is, basic, intermediate or advanced), however some comparison can be made with the paper by Upton et al (2007), who reported that 88% of practice nurses were working at a basic level and had not obtained accredited training for COPD care, while 85% were working in an intermediate capacity and 50% in an advanced capacity. An advanced role is defined as the practice nurse autonomously diagnosing and providing follow-up care, while intermediate practice is defined as the practice nurse autonomously confirming diagnosis (but not autonomously providing follow-up care), and the basic role is defined as no autonomous diagnosis or follow-up care. My results compare favourably with those of Upton et al (2007) in that predominantly,

accredited training (that is, diploma/degree-level attainment) continues to be reported by a minority of practice nurses only. However, as my survey response was low, arguably the extent of accredited training for spirometry assessment/interpretation amongst practice nurses within the UHB is not truly known and may potentially be greater than actually reported.

Greater confidence levels in both spirometry assessment and interpretation were expressed by practice nurses after undergoing training of three days or longer. This compares favourably to the findings of Bolton et al (2005), who also reported an association between higher levels of confidence and amount of training. White et al (2007), however, reported poor quality spirometry after three training sessions, consisting of an initial two hour training session, then three one-hour individual sessions, followed by a final individual session. Borg et al (2010) also concluded that a fourteen-hour spirometry training course alone did not provide sufficient skill to perform quality spirometry. I was not surprised to see greater confidence levels reported after undergoing training of three days or longer, as the longer training time is suggestive of more practice with spirometry and the opportunity for practice nurses to share expertise and develop their clinical skills collectively. Having taught spirometry assessment to practice nurses within group settings, my observations have always been that practice nurses welcome group teaching with the opportunities for networking and sharing of expertise.

Interestingly, the length of service as a practice nurse appeared to have impacted on confidence levels in undertaking spirometry assessment and interpretation, with practice nurses who had been employed for ten years or less reporting higher levels of confidence with both the procedure and interpretation. There are possible explanations for this. It is suggestive of new practice nurses potentially being better educated at the start of employment, with formal training programmes being in place as part of induction training. However, it may also be reflective of spirometry now being a more accepted and familiar integral tool for respiratory assessment, with in-house knowledge being cascaded down general practice nursing teams. These results do compare favourably to the QNI report (2016) where 510 (85%) out of 3405 practice nurses new to general practice reported they felt prepared for all clinical areas including spirometry. However 15% of the practice nurses (n=510) reported that they were unprepared for spirometry assessment (QNI, 2016). On considering the numbers, this is suggestive of disenfranchisement or professional isolation within teams where spirometry is not fully understood or regarded as a key clinical skill.

Interestingly, practice population size did not appear to have any relationship to confidence in spirometry assessment and interpretation. There is no comparable data other than the focus on practice population size in the paper by Upton et al (2007), with discussion centred on

practice nurses being more likely to be attracted to larger practices as there is greater scope for specialism, and smaller practices having difficulty in releasing staff for training.

My data then demonstrated that spirometry was predominantly regarded as an essential tool for COPD chronic disease management, with confirmation that practices nurses were motivated and enthusiastic about spirometry and COPD care. However, less favourable opinions were also reported, as spirometry was reported to be off-putting, an unwelcome tool for clinical practice, and, for a minority of practice nurses (2%), off-putting for COPD care. More than one answer was ticked in response to this question, suggestive of a range of perceptions about spirometry assessment/interpretation in clinical practice. There is no comparable data, as the literature review (Chapter Two) demonstrated that practice nurses and trained respiratory nurses have undertaken spirometry assessment and interpretation for research purposes (Walters et al, 2007; White et al, 2007; Jones et al, 2008; Strong et al, 2009, Borg et al, 2010); however, their opinions on the procedure, interpretation and general use on clinical practice are unknown.

In summary, although the questionnaire response was low, I feel that the results provided a reflection of spirometry and practice nurses within the UHB, confirming most of my anecdotal observations from clinical practice and teaching. The results demonstrated a lack of uniformity of training and knowledge with spirometry assessment, and suggested a picture of practice nurses working as relatively isolated practitioners in general practice teams, lacking significant guidance or support and ability to manage clinical time. Attitudes towards spirometry were mixed, but a significant finding was the impact of length of service as a practice nurse impacting confidence levels regarding spirometry assessment/interpretation. The data therefore provided some results and generated discussion which was used to inform the **qualitative** data collection.

6.1.4 Limitations

Limitations to the quantitative data were the limited sample size and the low response to the questionnaire, resulting in the lack of statistical analysis. Only sixteen practice nurses (60%) reported they interpreted the spirometric trace therefore questions regarding spirometry interpretation were only answered to a limited extent. The questionnaire did not ask for total years qualified as a nurse, instead, it asked for years qualified as a practice nurse. The lack of demographic data, and lack of gender on the questionnaire also have to be acknowledged as limitations. In retrospect, although I was aware there were no male practice nurses employed in general practice within the UHB, as the theoretical framework was later changed

to that of feminist principles, omission of gender was a significant omission. On reflection, this was a clinician-researcher conflict. Had the theoretical framework been influenced by aspects of feminist principles from the beginning, this would not have occurred.

6.2 Qualitative Discussion

6.2.1 To identify (any) barriers to practice nurses' provision of accurate spirometry assessment and interpretation for patients with COPD (Objectives1&2)

Practice nurses' views on spirometry assessment and interpretation were mixed, but overall practice nurses reported that their organisations favoured and were positive towards spirometry as an assessment tool for the chronic disease management of COPD. However, although organisations favoured spirometry, paradoxically there appeared to be conflicting views on the levels of support and guidance given to undertake the procedure, ranging from no support at all to nursing team support to "in-house" training from GPs. In addition, multiple barriers to accurate spirometry assessment and interpretation were commonly reported.

As with the quantitative analysis, practice nurses reported barriers of time restraints, and other barriers of old, faulty equipment, both of which suggested disenfranchisement, lack of autonomy in the organisation of work and lack of team communication within the workplace. Similar results were shown by Borg et al (2010), who reported allocated time for the procedure to be a problem in clinical practice. Walters et al (2008a) also identified time limitations as a barrier, but specifically for GP interpretation of spirometric data. There is no comparable data on reported barriers with equipment.

Lack of communication and clinical knowledge was also suggested by the reporting of inappropriate referrals for spirometry, inaccurate diagnoses and the suggestion of GPs' uncertainty in the interpretation of spirometry for diagnosis. There is no comparable data for inappropriate referrals for spirometry but the paper by Walters et al (2008b) also reported self-reported lack of GP expertise in spirometric interpretation. Misdiagnosis of obstructive lung disease from inaccurate spirometry interpretation is comparable to the findings of Bolton et al (2005), who reported that 20% (21) of 86 patients were misclassified as having COPD, despite having had diagnostic spirometry. A later paper by Jones et al (2008) also reporting similar findings in that 158 (27%) out of 632 patients with COPD were incorrectly diagnosed and offered inappropriate chronic disease management. Later data by Strong et al (2009) supported misdiagnosis in that 12% (91) of 761 patients had spirometry results recorded in medical records that did not support the diagnosis of COPD.

One practice nurse also described lack of GP interest towards the management of COPD patients. This reflected the findings of Walters et al (2008a), who, following analysis of qualitative data, stated that formal (COPD) diagnosis was often delayed as no apparent disadvantage was seen by GPs in applying the diagnosis. Joo et al (2013) also reported a lack of physician concern about the misdiagnosis of COPD, irrespective of whether it was over-diagnosis or under-diagnosis, with scepticism about whether spirometry was warranted to diagnose and treat COPD.

6.2.2 To ascertain what guidance or support exists for practice nurses when undertaking and interpreting routine annual spirometry screening for patients with diagnosed COPD and the usefulness of (any) existing support mechanisms

Disenfranchisement was further suggested with the describing of professional isolation, which was pervasive throughout all of the interviews. The majority of practice nurses appeared to accept their working conditions and inability to effect change, with only a minority of practice nurses stating they were empowered within their organisations and had made positive changes to service development and working conditions. Similar results were shown by Upton et al (2007), who stated that 45% of nurses offering a COPD service were often not provided with sufficient supervision in order to undertake many of their duties. There is no other comparable data on professional isolation and/or disenfranchisement in clinical practice.

Difficulties in accessing education were stated. Access to training was not reported by Upton et al (2007) or Bolton et al (2005), although Bolton et al (2005) did acknowledge the lack of uniformity in education for spirometry assessment and interpretation. However, the findings reported by Upton et al (2007) did illustrate that practice nurses lacked accredited training for COPD care. This was attributed to lack of widespread availability of training courses at the time of their survey in 2006; however, eight years on, this is no longer the case. The emphasis has therefore shifted from lack of training opportunities to problems/barriers in accessing training opportunities. This is supported by the QNI (2016) who reported that 15% (510) of 3405 practice nurses stated that they felt unprepared for spirometry assessment and COPD care.

Varying levels of confidence with the spirometric procedure/interpretation were expressed. Confidence was described as subjective, with one nurse describing confidence as “comfortable”, associating confidence with clinical skills and knowledge. Bolton et al (2005) and Halpin et al (2007) both relied on practice nurses and clinicians self-reporting levels of confidence in the spirometric procedure yet did not define or explore the concept of what

confidence actually was. Halpin et al (2007) concluded that there were disparities between perceptions and reality, on comparing self-reported confidence to competence in ability in the management of COPD.

There was general consensus amongst the practice nurses that although there was a relationship between the two concepts of confidence and competence, the concepts were different. These observations support the findings of Stewart et al (2000), who recommended that the terms should not be used synonymously. However, one practice nurse stated that as her knowledge and skills increased, her self-confidence was increased. This supported the outcomes of the paper by Borg (2010), who demonstrated that stand-alone spirometry training did not foster competence, but that short-term follow-up and mentoring over several months did promote competence.

6.2.3 To articulate what processes/attempts are in place/have been made to address any existing barriers to accurate spirometry assessment/interpretation

Practice nurses were articulate in voicing what attempts had been made/put in place to improve their skills and knowledge in spirometry assessment and interpretation, which in fact was very little. Among the nine practice nurses interviewed, a broad range of training had been undertaken, ranging from accredited diploma in COPD management and diploma qualification in general respiratory health to one to two days of spirometry training or less. This broad range of training, although not surprising, is similar to the levels of training reported by Upton et al in 2006, with 53% of practices providing COPD services not having acquired accredited COPD training.

Not surprisingly, training was identified as the main need to improve skills and knowledge with spirometry assessment and interpretation. Mandatory training with assessment of competency was highlighted by practice nurses as highly desirable, in addition to training of GP colleagues to reduce professional isolation and promote enfranchisement. A designated GP clinical lead, as an expert clinician and mentor, was also identified as a need by several of the practice nurses, with one practice nurse highlighting the lack of a respiratory clinical GP lead at her practice, in comparison to the diabetic service with a designated clinical lead.

Finally, unexpectedly, practice nurses also introduced the subject of the health care assistant role in spirometry. Three of the practice nurses stated that they had health care assistants' support for the procedure; one practice nurse identified, however, that this role was of limited

success. Two practice nurses stated that they would like health care assistant support for the spirometric procedure, and they regarded this as service development.

6.3 Theoretical Implications

6.3.1 Practice Nurse Identity

It is clear that the role of the practice nurse has developed to that of a valuable contributor and income generator for the general practice team. But who is the practice nurse, and is the practice nurse role now recognised within the gendered hierarchal general practice organisation? I have previously stated that the past ten years have seen considerable developments within practice nursing with the emergence of new roles and development of clinical expertise in chronic disease management. However, underlying the developments are tensions of disenfranchisement: externally and within the gendered general practice environment, that unless acknowledged and addressed, have potential to negatively affect the development of practice nursing in the long term.

Sixteen years ago, Carey (2000: p. 328) described how the role of the practice nurse had:

> developed and grown within a political environment that had entrusted power within the GP as principal instigator and influence upon health care delivery

Carey (2000) then questioned whether the power of GPs would continue to be maintained in the new millennium, or whether power would shift to other key players in the delivery of health care, the key issues being whether practice nurses would seize potential opportunities and move practice nursing as a profession forward, or sit back and wait to be directed.

At the time of writing, in 2014, power within the general practice teams has, to some extent. shifted and devolved to practice nurses, but in an ad hoc manner and heavily influenced by the legislative changes enforced by the GMS Contract (BMA and NHS Confederation, 2003). Arguably, developments to practice nurses' roles are closely related to and influenced by income generating capacity. The GMS Contract (BMA and NHS Confederation, 2003), although positive in nationally increasing the practice nursing workforce and gaining recognition from the medical profession for the income generating capacity, has critically perpetuated the concept of the "hidden women" (Mies, 2000 p.65). Further, by diluting the practice nursing culture and ethos, with the emphasis on targets and attainment of points for financial remuneration, practice nurses have become "marginalised" further on the fringes of the wider nursing profession (Roberts et al, 2009, p.289). Theoretically practice nurses have become "doubly oppressed" because they are socialised as both nurses and women and are

working within the gendered general practice environment (Roberts, 2000, Hutchinson et al, 2006). Critically, practice nursing, ten years post the GMS Contract (BMA and NHS Confederation, 2003), has collectively failed to develop, as practice nurses have failed to maximise their opportunities for professional development within the modern general practice environment.

Roberts et al (2000) describe the inner battle of horizontal violence, that is: inter group rivalry, lack of unity and pride, and aggression turned inward as aspects of the oppressed group model within nursing. This concept of horizontal violence within nursing, allowing other groups to maintain control and not be challenged by nursing as a result of the inability of nurses to join together to support each other (Roberts, 2000; Thomas, 1998). This is relevant to practice nursing and theoretically perpetuates exploitation, that is: the assumption that individuals outside the privileged groups (medical hierarchy in this example) should be servants of the privileged (Young, 2000). This study supports the inner battles of horizontal violence within the practice nursing culture, with issues of professional isolation, disenfranchisement and lack of educational opportunities contributing to and driving the tensions within practice nursing. Yet also, the study has demonstrated the enthusiasm and motivation of practice nurses to expand their roles, the desire for their voices to be heard, and the desire to develop their services and improve patient care in the long term. Some of the practice nurses therefore have experienced “empowered states” as they have felt safe to “speak” (Glass, 1998, p.122).

Roberts et al (2009, p.290), describe a second commonly cited oppressed group behaviour as that of “silencing“ that arises from the belief that “good nurses“ do not challenge the status quo and will therefore silence themselves to avoid conflict. Silence creating a negative cycle, resulting in diminishing active involvement in patient care and positive expressions about nursing work that leads to further devaluing (Buresh and Gordon, 2006). Arguably, practice nurses have thus silenced themselves in passively accepting their conditions and terms of work in general practice and the changes to working patterns since 2004 as the norm. This is particularly relevant to the passive acceptance of fragmented educational preparation and training for spirometry, lack of support within the workplace and acceptance of faulty equipment and even misdiagnosis of COPD by team members.

Brooks (2007) stresses the importance of dialogue between and amongst women as a key factor for achieving alliances and promoting social change and eliminating oppression. However, as practice nursing has a relatively short history, with rapid developments in social change over the past ten years, “silencing” and “horizontal violence” (Roberts et al, 2000, p.290) with disenfranchisement continue to be major issues in the promotion of practice nursing “dialogue” (Brooks, 2007, p.78). This study has demonstrated the varied educational

preparation and variety in roles when undertaking spirometry assessment and interpretation for the chronic disease management of COPD, therefore the sharing of dialogue is further challenged by the multidimensional nature of the different social realities of the practice nurses and the oppression the nurses suffer in different shapes and forms in their work environments. Fletcher (2006) argues that the patriarchal organisational structure of health care has been an influencing factor on the oppression of nurses, but theorised that nurse leaders can lead nurses out of oppression via dialogue and self-awareness. However, the private employment status, social isolation and disenfranchisement of practice nurses critically does not facilitate strong leadership and stimulate dialogue and self-awareness.

Holland et al (2012) describe how the concept of professional confidence is fostered through the ability to competently fulfil expectations via a process of affirming experiences, including an understanding and belief in the role, scope of practice and significance of the profession. This study has demonstrated that confidence in spirometry is lacking and confidence and competence continue to be challenges for practice nurses in achieving best clinical practice with spirometric assessment. Practice nurses still accept and embrace the dominant culture of the gendered hierarchal environment as the established norm, and suffer from "cultural imperialism" (Young, 2000, p.36) that is, classed as the "other group" outside the dominant group. The "other group" (Young, 2000, p.36) viewed as both different and invisible, and is devalued and objectified by the dominant group. It is not until practice nurses recognise and overcome exploitation, marginalization, powerlessness and cultural imperialism (Young, 2000, p. 36) that they can become politically active, develop their voice and exercise their right to influence the development of general practice care in the long term..

Is this too critical an assessment of practice nursing? Immersed within the practice nursing culture for almost twenty years, having experienced practice nursing pre and post-GMS Contract (BMA and NHS Confederation, 2003), and having experienced first-hand the frustration of oppression with task allocation within the workplace, perhaps I am too impatient for change. Critically, I had been content to work within the general practice organisation for eight years prior to 2004, yet had not had any desire to become politically active and change the profession as a whole. Why then should other practice nurses be any different and desire social or political change?

Cook and Fonow (1990) describe feminist research as the search for techniques which analyse and record the social process of change, the ultimate research aim being to empower the research subjects so that they might confront their oppression and formulate their own plan of action. Feminist research is thus research for women in transforming their androcentric society (Cook and Fonow, 1990). It has been the analysis and recording of the social and

political development of the practice nurse role that has enabled me to be reflexive throughout the research process, critically appraise my role as clinician researcher, facilitate the questioning of who I am, understand the drivers to my professional and academic development, and my contribution to practice nursing. Further, reflexivity has enabled me to question the research results and contextualise the results to the modem practice nursing environment post 2004. Therefore, it could be argued that it is reflexivity that has enabled me to challenge the norm of "objectivity" (Marchbank and Letherby, 2007, p. 24) of my role and of the role of the practice nurse and spirometry. Glass (1998, p.134) noted that

> once nurses have recognised the value of their voice, they can effectively listen to other nurses and value each other in their own right

Reflexivity therefore has enabled me to alter my silence by understanding the cycle that has helped continue it (Roberts, 2000). This awareness has been liberating. However, other practice nurses may not have experienced the understanding of awareness through reflexivity in the ten years post GMS Contract (BMA and NHS Confederation, 2003), therefore it could be argued that I am being too critical of my profession.

Practice nurses need to foster relationships and enter into a communal dialogue (Brooks, 2007) which respects the diversity of practice nurses' perspectives on COPD and spirometry, whilst enabling the growth and strengthening of their collective voice to reduce gender imbalances within their organisations, and promote social change. There needs to be a change of focus within the practice nursing literature away from the current focus on task-oriented clinical skills and towards promotion of an inherent understanding of the developing practice nursing culture which will reduce marginalization exploitation, powerlessness and cultural imperialism (Young, 2000) and challenge the internalised beliefs regarding their inferiority within the general practice team. Only by gaining an understanding of the practice nursing culture, and acknowledging the barriers and challenges to practice nurses in learning new skills and knowledge, can long-term change be affected and clinical skills be developed.

Only through recognition of the developing practice nursing role in general practice, with the acknowledgement of the practice nurse as an equal within the team and subsequent correcting of the gender imbalances, will the practice nurse become an integral team member and have loyalty to the team. Tensions between standards of care and financial remuneration, and between nursing values and medical values, have previously been referred to, and I would support any practice nurse who does not wish to stay in post if they felt their professional accountability (NMC, 2015) was being compromised by lack of education or support in their workplace.

6.3.2 Education

The literature, albeit sparse, was sufficient to highlight that pre-2009, spirometry was a challenging procedure in both accuracy of assessment and interpretation. Although the empirical data demonstrated the relative infancy of spirometry services in general practice, it was clear that spirometry was a task that had not been fully embraced by general practice teams. There was a consensus throughout the empirical data that practice nurses were undertaking the majority of spirometric assessment, but there is no literature on practice nurses' views on the challenges to accurate spirometry assessment for COPD chronic disease management pre- and post-2009, other than a plethora of step-by-step guides to undertaking the procedure with basic interpretation. Davies (1995, p. 62) describes the "masculinity" of organisational life as a fiction that cannot be sustained without women's work. Practice nurses, lacking presence and silent within the empirical data, are thus undertaking spirometric procedures, fulfilling and perpetuating the women's role within the gendered organisation, for no personal gain.

This study has demonstrated that there has been little in the way of progression in spirometry services within the general practice setting. Practice nurses are commonly working as unilateral, disenfranchised practitioners within general practice organisations, and are commonly undertaking a procedure in which they are not highly confident. The subjectivity of reporting of self-confidence has to be acknowledged; however, professional confidence was also a recurring theme within the **qualitative** strand of the data.

Access to training was highlighted as challenging, in addition to the challenges to competency in the procedure/interpretation attributed to the lack of national mandatory training and assessment of competency. Although national recommendations have been made for standardisation of spirometry training and proposed standards for spirometry assessment (Levy et al, 2009; Duffin et al, 2013; Thomas et al, 2014; Welsh Government (WG), 2014), progress has been slow. More recently, Duffin (2013) *has* highlighted the lack of mandatory training for spirometry, discussing how GPs and practice nurses will potentially have to undergo specialist training in England under new rules proposed to improve the diagnosis and monitoring of COPD.

This is positive in that there is potential to reduce professional isolation and professional disenfranchisement. However, recommendations for specialist mandatory training for spirometry in England may not be transferable to general practice in Wales. The Welsh Government did identify at the end of 2014 that there was a need to validate and improve reporting and interpretation of spirometry results within Local Health Boards (WG, 2014) but critically, there were no recommendations on how this was to be achieved.

Interestingly, Duffin (2013) defines specialist training as forming a list of accredited individuals or organisations following possible attendance at a half-day or full-day course on spirometry training. As discussed in Chapter Two, White et al (2007) reported up to a 50% chance of spirometry accuracy/interpretation following similar levels of training. It is unclear where the figure of a half day or full day of training has arisen from and whether there has been any practice nursing consultation prior to the making of recommendations for specialist training. Again the concept of the "hidden women" with lack of voice and contribution to historical science (Mies, 2000, p. 65) is apparent.

Arguably, the introduction of a mandatory half-day or one-day training in isolation has the potential to perpetuate the current situation of a disenfranchised, partially skilled practice nursing workforce, with ongoing lack of competency and confidence im spirometric assessment. This study has clearly demonstrated the recommendations by Duffin (2013) to be, at best, a woeful underestimation of training needs. The majority of practice nurses (63%) in the study had already undergone one to two days of training on basic spirometry assessment and interpretation, yet reported significantly less than highly confident levels with both procedure and interpretation. Professional development planning needs to recognise that attendance at training days is not enough to promote quality care. Valentine (2001) describes the "avoiding and compromising" behaviour (p. 69) of communication styles within nursing. However, the onus is on practice nurses to contribute to professional development planning and alter their pattern of "silencing" (Roberts et al, 2009, p. 290) to speak out about their contribution to spirometric assessment. Whether this is at present achievable only ten years after the changes to general practice nursing, is questionable.

Further, training for clinical skills development needs to incorporate ongoing support for the whole general practice clinical team, not just the practice nurses. The literature review suggested that practice nurses are increasing their isolation in undertaking clinical assessment skill tasks that they are unprepared to undertake and that GPs have a need to undergo similar training in order to support the nurses and work as a team. On discussing oppression within a system, Dong and Temple (2011), describe how when one part of a system begins to change, the rest of the system is affected, and will too, change. Brann (2011) describes increased errors in practice with compromise of patient safety resulting from power imbalances and oppression of employee groups within health care organisations. If GPs thus engage with training and are prepared to share power over development of spirometry services in general practice, theoretically, this can only be positive and benefit patient care in the long term. However, it is questionable as to whether this is also, at present, achievable.

Supervisory support and ongoing assessment of competency should be key elements of basic training for any clinical procedure and these needs were highlighted by several of the practice nurses as desirable elements for spirometry training. Training programmes for cervical screening, for example, have successfully incorporated such elements, inclusive of an assessment of competency by an external assessor once basic training and in-house assessment of competency are complete. The training is followed by mandatory cervical screening updates every three years. This is accepted as the standard in general practice, and as spirometry is also a task or clinical procedure, I would question why spirometry training should be any different.

Supervisory support with ongoing assessment of competencies can also be transferrable to the emerging role of the health-care assistant in general practice, to provide a framework for training and competency in spirometry assessment. As this study has demonstrated that spirometry training seems to be a barrier for practice nurses, it is therefore logical to assume that health-care assistants are no different and have similar, if not greater training needs, as the general practice health-care assistant role has developed ad hoc and there is no current regulation or remit of the role (Brant and Leydon, 2009).

The concept of horizontal violence within nursing (Roberts et al, 2009) has been referred to in a previous section. Arguably, practice nurses could be accused of perpetuating horizontal violence within general practice by creating their own power imbalances by planning on, or cascading a clinical skill to subordinate team members. The cascading of clinical skills that do not seem to have been fully embraced by practice nurses, with proven less than highly confident levels of ability to undertake the procedure, being a critical issue. However, as previously discussed with the “silencing” and submissiveness (Roberts et al, 2009, p. 292) of the practice nurse voice within the general practice team, practice nurses may not have contributed to the changes in spirometric assessment and this could, in reality, be a further example of cultural imperialism and marginalisation (Young, 2000). This has significant potential for the perpetuation of a general practice workforce that is only partially skilled in spirometry assessment/interpretation if not addressed by robust policy and strategic planning for training and assessment of competency, and has potential to perpetuate disenfranchisement within practice nursing teams and promote poor quality of care with inaccurate diagnosis, treatment and monitoring of COPD in the long term.

Recommending mandatory spirometry training for GPs in England (Duffin, 2013) is a positive step forward although there are no current recommendations for parallel GP training within Wales (WG, 2014). As a clinician, it is clear post-2004, that although practice nurses have struggled with spirometry assessment /interpretation, they *are* generally developing their

clinical skills and knowledge in the chronic disease management of COPD. However, as the chronic disease management of COPD was not significantly in the GP domain prior to 2004, there is a risk of GPs becoming even more marginalised in involvement with spirometry, which in turn has potential to perpetuate the isolation and increase the vulnerability of the practice nurse within the team, also perpetuate hegemony within the gendered environment. As an advocate of multidisciplinary team working I believe that healthcare provision and service progression can only be maximised by an interprofessional team practice approach to healthcare services, focusing on process as well as team structure. Effective communication and understanding of the roles of other professions are key issues in interprofessional practice (Caldwell et al, 2006) yet this study demonstrated that the support from GPs for spirometry assessment/interpretation was not considered to be overly helpful and that spirometry is not a clinical skill that is fully understood or indeed embraced by many GPs. Arguably, general practice teams are therefore not functioning as interprofessional team units, resulting in patients with COPD critically not receiving optimal care.

Mandatory spirometry training for GPs therefore can only be positive and has huge potential in improving interprofessional team working, with the fostering and development of a shared common knowledge, language and expertise which, in turn, can only enhance patient care in the long term. The practice nurses who participated in the **qualitative** strand of this study identified clearly that basic needs of a GP clinical lead as support and resource would enhance their care of patients with COPD. As a practitioner who has worked closely or "inter-professionally" with a GP clinical lead post-2004, I can advocate the benefits to interprofessional practice in the sharing of expertise and skills.

6.3.3 The Practice Nurse and Spirometry

With lack of sufficient training, should practice nurses therefore undertake spirometry assessment and interpretation in clinical practice? This study has reported the diversity of "social identity category" or "social location" (Hulko, 2009, p. 49) of practice nurses, and the positive or negative experience of social location (that is, experiences of privilege or oppression) on development of spirometric competency. Therefore, the ability of the practice nurse to provide accurate spirometry is highly dependent on the individual clinical skills of the practice nurse, the ability to access and attend training and the relationship with the referring GP. Further, it is also dependent on the individual practice nurse's ability to have overcome the faces of oppression of exploitation, marginalisation, cultural imperialism and powerlessness (Young, 2000) within the hierarchal gendered organisation. The ability of the GP in accurately interpreting the spirometric trace is also a key factor, as misdiagnosis of

COPD has been proven to be a reality, with the perpetuation of inaccurate disease registers, resulting in inappropriate screening and inappropriate patient care. This having potential to further marginalise the practice nurse with lowering of self-esteem and decreased job satisfaction at providing inappropriate care (Matheson and Bobay, 2007).

On describing the stages of change of negative behaviours amongst disenfranchised groups, DeMarco (2003, p.73), describes the first stage of “unexamined acceptance” as the status quo of power and authority is perceived as normal. The second stage of “awareness” (DeMarco, 2003, p.73) occurs following a learning experience during which time, an understanding of prevailing social inequality occurs. Overtime, the third stage of “connection” (DeMarco, 2003, p.73) is achieved, which there emerges pride in one’s self and appreciation of the support of colleagues. This connection facilitates further exploration and consciousness raising, representing the beginning of the development of a positive professional identity. The final stage of “political action” (DeMarco, 2003, p.73) entails working with others to make changes and to promote social justice and equality.

This study has demonstrated that the practice nurses who participated in the data collection are at different stages of change (DeMarco, 2003) in their professional environments. Critically, therefore, practice nurses have to adopt a professional accountability and refuse to undertake spirometry if they are at stage one (DeMarco, 2003) and accept poor working conditions of poor communication, lack of support and inaccurate diagnoses of COPD as the norm. Vulnerability in clinical practice is a realistic outcome for an untrained practice nurse working in unilateral isolation within the general practice team, with the potential for standards of care not to be achieved or maintained. This is a complicated picture, overlaid with challenges in the practice nurse role due to the unique nature of working within general practice. Although one may sympathise with the practice nurse, arguably the practice nurse does have a professional accountability to maintain standards and competency (NMC, 2015). The practice nurse is still practising as a registered health care professional and therefore is vulnerable to criticism and disciplinary procedures from the nursing professional body.

However, if appropriately trained, progressing through the stages of change (DeMarco, 2003) and working within a motivated and enthusiastic team, the practice nurse is ideally situated to undertake routine spirometry assessment and interpretation for COPD chronic disease monitoring. Olender-Russo (2009) discusses how a culture of regard can be developed as an antidote to oppression, the culture of regard consisting of three elements: recognition of nursing, empowering nursing, and facilitating goal attainment. Practice nurses have proven themselves to be flexible and reactive to developing skills with other tasks such as cervical screening: therefore, spirometry assessment/interpretation should be no different if robust

training and mentoring measures are put into place and there is a culture of regard within their organisation. Davies (1995) describes how the interaction of gendered institutions vary with time and place and how detailed analysis is needed as the culture of masculinity and femininity can be locked together as cultural baggage, each a partial expression of human qualities and experience. It does have to be acknowledged therefore that the individual workplace is key to successful developments in clinical expertise and that the gendered environment is a tension that may be insurmountable for the isolated practice nurse in gaining praxis and challenging hierarchies in role and clinical skills development.

On reviewing the current proposed standards for spirometry in primary care, Levy et al (2009) recommend that at least five tests a week (20/month) should be undertaken to maintain competence in staff who have achieved initial competence. Whereas similar recommendations are in place for the maintaining of skills and competency, for example, in other clinical areas such as cervical screening, the phrase "initial competence" is questionable. Again, there is a demonstrable lack of understanding of the current situation with spirometry assessment/interpretation in primary care by the current figures of authority on spirometry (Levy et al, 2009), as critically, primary care is a long way off uniform "initial competence" across the board. Critically, the proposed standards (Levy et al, 2009), seven years after publication, are at present still overly ambitious. In addition, questions are also raised as to how to manage spirometry within small or affluent general practices that have small COPD disease registers or low COPD prevalence and are not able to undertake twenty procedures per month, as their COPD disease registers might contain fewer than fifty patients in total.

The proposed standards (Levy et al, 2009) also fail to reflect working patterns in general practice, where patients with COPD are offered their annual reviews in the summer months, when they are fitter, more likely to be exacerbation-free and more likely to attend the surgery, with lower risks of cross-infection from crowded waiting rooms. Critically, the volume of spirometry assessment is also lower in the winter months; therefore, questions are raised as to whether spirometry should be undertaken in primary care at all if staff cannot meet proposed ongoing competency requirements in the winter months. One feasible solution would be for all spirometry to be undertaken by specially trained physiologists. This would necessitate a major investment in services at Health Board level; however, as the routine waiting time to see a respiratory physician is currently twenty-six weeks in Wales, it is doubtful that the capacity of secondary care departments could cope in meeting any additional demand from referrals for spirometry from general practices.

Therefore, although theoretical proposals on managing spirometry in primary care were put forward in 2009, critically, the standards do not reflect or acknowledge the reality of general

practice, inclusive of constraints to the general practice nurse and general practice teams in developing clinical expertise with spirometry. A further example is the criticism that practice nurses have the potential to make the system “unstable”, with “varying quality” of spirometry over time (Levy et al, 2009: p. 143), if they remain in post for only a limited number of years. If oppressed and not trained, given mentoring, or indeed not given a voice to contribute to service development, it is questionable as to why practice nurses *should* stay in post.

Reflexive note

The research at times was personally painful in the recognition of the struggles practice nurses face in attempting to gain recognition, voice and status within a still gendered, hierarchal general practice environment. The realisation that as a practice nurse, I have been “a player” within the development of practice nursing has also been difficult to reconcile at times, particularly because sociologically I too met the criteria of the early practice nurse in that I was almost having a career break, working part-time in general practice after having my child, having left a demanding secondary care clinical nurse specialist post. The recognition that I have probably contributed to the slow development of the profession, in that I wanted to work part-time with no excessive demands on my role for the first years of employment, has made me question myself professionally: I do not recognise the nurse I was, as I feel so passionate about developing my profession today.

It was also painful to realise that the unique lack of uniformity in the practice nurse role is a double-edged sword. Although the potential for role development is enormous in that it is positively challenging and exciting, there is also potential for the practice nurse to be completely silenced, creativity stifled, and the dynamic nature of nursing clinical practice to be harmed, with lack of role development and perpetuation of the adoption of medically oriented tasks. However, this again is my understanding and interpretation of the practice nursing culture, and an analysis located in a body of feminist and sociological theorising. It is not a viewpoint that is necessarily shared by other practice nurses. I accept that not every practice nurse may feel a sense of professional “injustice” and oppression; however, it is clear that my research has acted as a vehicle for praxis-oriented liberation for myself and some of the practice nurses, which has been demonstrated by the relationships that have been generated from the research process, and which are still present today.

I feel that by presenting the practice nurses’ voices, I have, to a very limited extent, contributed to a small degree of social change for practice nurses. It is not possible to state that by enabling the practice nurses’ voices to be heard, I have promoted praxis for all the practice

nurses who contributed to my research as general practice organisations vary in their levels of organisational gender and hierarchal oppression and their individual development of spirometry services are not yet known. What I have achieved though, by reducing isolation and enabling voices to be heard, is to have raised the profile of spirometry for the chronic disease management of COPD and generated discussion centred on future training needs within the UHB.

Throughout 2015, I supported and played an active role within a local practice nurse respiratory group; spirometry and the constraints to developing spirometry services and my research findings discussed. In January 2016, further to the Welsh Respiratory Plan (WG, 2014), the UHB proposed a mandatory two day training course for all practice nurses. Further to this initiative, I have been in discussion with UHB representatives, in the planning for follow up mentoring of practice nurses in clinical practice, inclusive of mandatory GP training and mentoring in spirometry competence. I recognise that I am unable to solely challenge gender oppression or professional hierarchal oppression within the general practice environment, however, my original claim for achievement of limited social change by reducing social isolation for practice nurses is strengthening, and actively contributing to the development of clinical expertise for spirometry assessment and interpretation within the UHB.

In parallel, I feel that I have also contributed to social change by raising the profile and status of COPD chronic disease management by researching the barriers to accurate spirometry assessment and interpretation within the general practice nursing environment. I have every intention of disseminating my findings to present a realistic perspective of the challenges to spirometry assessment and interpretation in COPD chronic disease care other than that of how to undertake and interpret spirometry in clinical practice. My views are that through a realistic presentation of the barriers to spirometry that are still present ten years after the contractual changes to general practice care, I will represent the voice of this historically neglected patient group and strive to improve spirometry services in the long term.

Chapter 7 Summary and Recommendations

7.1 Summary

The research, has been rewarding and worthwhile in that I was able to research two areas that I feel passionate about: practice nurses and lung function assessment for the chronic disease management of COPD. This chapter will summarise the research, whilst further critically acknowledging the study's limitations. Suggestions will then be made to address and overcome these limitations, and recommendations made for future education, research and practice.

Practice nurses are unique in that their roles have been shaped by Government legislation and individual GP employers' need for healthcare services. Although practice nurses historically have provided essential core services for primary care, the nature of their medically task allocated roles and part-time employment status have isolated them from the wider nursing body. Adoption of the medically task-oriented ethos of care has, I feel, been at a cost to the development of a practice nursing body of knowledge with role uniformity and role progression.

Changes to Government legislation in 2004 were positive in that numbers of practice nurses increased considerably, thus strengthening the professional group and its collective voice. The profile of the practice nurse workload also changed, with a new focus on chronic disease management for target attainment and financial remuneration. However, the practice nursing literature is dominated by advice on good clinical practice, specifically relating to key areas of chronic disease management, but little is known about the impact of Government legislation on practice nurses, other than reports of increased workload and reduced morale secondary to enforced role changes in which practice nurses had no say or involvement. As a result, practice nurses appear to be a silent, oppressed, anomalous professional group within the nursing literature, with hidden tensions of professional recognition, development and role recognition within the wider nursing profession and the hierarchal gendered general practice environment.

COPD has parallels with practice nursing in that, until the past decade, it has been of low profile and has generally been a silent disease within the medical and nursing literature. The "Cinderella" respiratory disease, historically viewed with therapeutic nihilism, only formally came onto the general practice agenda when included as a chronic disease for target attainment and financial remuneration in 2004. As a result, COPD services, in comparison to

services for other chronic diseases such as diabetes and asthma, are still in their infancy. Prior to 2004, COPD had never formally been within the GP domain for chronic disease management: therefore, knowledge and skills had not been shared, cascaded and developed throughout general practice teams. Yet paradoxically, from April 2004, practice nurses were expected to be proficient in chronic disease management for this "new" respiratory disease, and in spirometry assessment and interpretation as an integral part of this management. The key issue of the "silent group" and the "hidden disease" was the overriding reason for undertaking my research as, although targets and successful financial remuneration were being achieved, anecdotally, practice nurses were reporting barriers of lack of support and difficulties in accessing training in spirometry and COPD care. Competence and confidence in undertaking spirometry seemed to be key recurring issues anecdotally reported, and it appeared that practice nurses were becoming increasingly isolated in clinical practice, in their attempts to become skilled and knowledgeable in spirometry assessment and interpretation.

My research aims were therefore to find out what support was out there in primary care for practice nurses, and to determine the usefulness of this support. I wanted to identify (any) barriers to spirometry assessment and interpretation, as there were clearly tensions, yet paradoxically, targets were being achieved. I wanted to determine whether problems with spirometry were being reported by just a few practice nurses or whether the problem was widespread within the UHB and actually real. I also aimed to determine what processes were in place/had been made to address (any) barriers to accurate spirometry assessment/interpretation. By doing so, best practice could be shared and long-term services improved.

As a practice nurse researching practice nurses, I have a deep inherent understanding of the practice nursing culture, inclusive of the historical and contemporary social and political constraints to the practice nurse role. I wanted to research the social reality of practice nurses and spirometry for COPD chronic disease management service provision, situate myself within the research process, be reflexive, give voice and raise the profile of the silent nursing minority working within the gendered general practice environment.

The first indication that practice nurses were a disenfranchised under-researched group was given by the literature search findings, which confirmed that there was very little research/empirical data relating to practice nurses, spirometry and COPD, other than numerous articles on how to undertake and interpret spirometry. The literature was dated and it was obvious that there had been a surge of academic interest in practice nurses and spirometry for two to three years following the introduction of the GMS Contract in 2004, but little since. My explanation for this is that the possible academic assumption was made that

primary care had collectively and uniformly become skilled at spirometry for chronic disease management for COPD.

To maximise data collection from a difficult-to-access group, I decided that a mixed methods study of quantitative data collection, followed by exploration of themes and concepts with **qualitative** data collection, would either confirm or disprove the anecdotal reports of the struggles that practice nurses were having in general practice. The processes of ethical approval and data collection were at best a bit of a "bumpy ride", secondary to my anomalous practice nurse role and then the South Wales measles outbreak; however, data collection and analysis did finally proceed.

Quantitative data analysis confirmed that practice nurses were struggling with spirometry assessment and interpretation, reporting time constraints, difficulty accessing education and lack of clinical support as main barriers. Confidence in undertaking and interpreting the spirometric trace was a significant barrier, with lack of training, clinical time and lack of GP support again being reported as factors affecting confidence, yet reported as needs to improve confidence if changes could be made. Although the questionnaire response rate was low, and therefore analysis was limited to descriptive statistics only, my results were comparable to the empirical data. As the response rate was low, a greater weighting was given to the **qualitative** strand, highlighted in bold to emphasis this weighting.

Qualitative data analysis, I feel, painted a bleak picture of disenfranchised practice nurses struggling to provide a service for the chronic disease management of COPD using out-of-date or faulty equipment, struggling with time constraints and lack of in-house team understanding, support and interprofessional working practice. Several practice nurses mentioned healthcare assistants undertaking the spirometric procedure, which was unanticipated, and of concern in the perpetuation of clinical skill devolution in the absence of established expertise.

There were some positive views expressed on the value of spirometry in clinical practice, and general practices as organisations seemed to favour spirometry as an assessment tool for chronic lung disease. However, I would critically question whether or not the spirometer is embraced for its income-generating capacity or for its ability to improve care for a neglected client group. This is a critical point, as the **qualitative** analysis also depicted professional isolation; challenges in power dynamics within gendered organisations; difficulty in accessing education and inaccurate disease registers secondary to poor interpretation. The **qualitative** data was collected from nine practice nurses, with a range of training, roles and qualifications being represented. However, there was a marked overall lack of ownership of spirometry as

a procedure, and, I feel, a lack of overall empowerment for COPD chronic disease management and service development.

The concepts of confidence and competence were hidden tensions within the barriers, and whereas practice nurses recognised the differences between the two concepts, the relationship between confidence and competence was uncertain, with the suggestion that increased confidence led to competence. Although the barriers to accurate spirometry assessment and interpretation for chronic disease management for COPD have been proven and discussed, I feel that it is the underlying complexity of the hidden tensions of confidence and competence that are central to my research. These tensions unequivocally summarise the practice nurse role: that is, an isolated and disenfranchised practitioner, motivated and keen to progress with service provision, but struggling with a voice and for empowerment and ultimate praxis within a politically driven, patriarchal gendered environment. It is not until isolation is reduced, with equitable education and mentoring given, introduction of uniform standards for care and basic mandatory qualifications for specific chronic disease areas that the practice nurse voice will be strong enough to be heard.

Aspects of feminist methodology has been an effective theoretical lens to underpin and enhance my research, enabling me to understand my situatedness within general practice nursing and the constraints to the roles of other practice nurse colleagues within the UHB. I do not claim to have an in-depth knowledge of feminist theory. This work is also not claiming to be a feminist study. However, it is aspects of feminist methodology that have facilitated personal professional growth and enabled me to present my colleagues' voices to the best of my ability, and in doing so, has changed me as a clinician throughout the research process. Further, reflexivity throughout the personal research journey has also enabled me to identify and make clear recommendations for future service development for general practice spirometry in the long term whilst also recognising the limitations to the study.

7.2 Limitations

Further to the limitations to the quantitative data presented in section 6.1.4, the lack of availability of a validated questionnaire and validation of the developed questionnaire was beyond the scope of this thesis. There was also the possibility of response and responder bias, and as the Welsh health care system is different to that in England, and the working conditions, local support mechanisms and guidance for training of English practice nurses are unknown, the results can only be limited to Wales.

A greater survey response rate might have achieved more significant correlations and reduced the sample bias. There is an argument that only the motivated and enthusiastic practice nurses volunteered to share their experiences and views on spirometry assessment for the **qualitative** strand: therefore, I might not have gained a true and accurate picture of the reality of general practice nurse-led spirometry. There was an assumption that all practice nurses within the UHB are computer literate and check e-mails regularly. This might not have been the case, and might potentially have affected data collection within the given time frame. As clinical expertise is so diverse in practice nursing, junior practice nurses, or practice nurses new to COPD, might have been put off self-reporting potential lack of knowledge. I feel that the local measles outbreak also impacted significantly on the questionnaire response rate; however, I am unable to prove this.

Although anecdotal comments about the difficulties with spirometry have been made by practice nurses working within several different UHB/Local Health Boards in Wales, my research provides a snapshot from my UHB only. It is unlikely that these findings apply just to my UHB: I suspect that practice nurses face the same barriers to spirometry assessment and interpretation throughout Wales. However, this cannot be proven and my research therefore cannot claim to be representative of primary care as a whole within Wales.

I am not certain that an alternative theoretical framework would have been as powerful a framework for underpinning the research and enabling me to question and analyse my role as researcher throughout the whole process. I do, however, accept that an alternative theoretical framework could have been used to underpin the study. However, although the analysis is mine, and is located in a body of feminist and sociological theorising, I accept the realistic argument that not all practice nurses feel the need to have a raising of consciousness, seek empowerment or indeed feel the need to have their voice represented. They may in fact be perfectly happy with their working terms and conditions and may not consider themselves to be disenfranchised and working within a hierarchal gendered environment. However, the practice nurses who participated in my research signalled that they wanted change, and in doing so, wanted to share their views and opinions and wanted their voices to be heard. Therefore, I feel I have done them justice in adopting a “morally responsible epistemology” (Stanley and Wise, 1993: p. 200) to allow this process to occur.

Study limitations could be overcome by repeating the study on a larger scale throughout Wales. The practice nursing profession could then be represented throughout all the regions of Wales, encompassing both rural and urban geographical areas. Without doubt, greater credibility would be achieved. However, although my study was a relatively small research

project, the information gained was considerable, raising further questions that need to be addressed in future projects and planning for continual professional development.

I have tried to represent the practice nurse voice to the best of my ability, however there were related experiences, comments and general references to spirometry assessment/interpretation than have not been included due to the word count constraints. I focused on the commonality of salient themes, whilst trying to represent as many voices as possible. Some practice nurses had more to say than others; however, I have made every effort to represent all their voices.

In retrospect, if I could revise the research aims, knowing what I know now after the data analysis, I would rewrite the last aim to focus more on the concept of team working within the multidisciplinary team. I felt originally that team working was addressed within the first two research aims. However, following the write-up of the literature review, I actually realised that an unexpected theme that came across was the parallel lack of training within both nursing and medical professions, and also the recurring finding that basic training was not enough in the absence of continued support and reassessment in clinical practice. In addition, as one of the unexpected issues of health care assistants undertaking spirometry was identified from my data collection, team working again was highlighted in a way that I did not anticipate.

7.3 Recommendations for Future Education

I would recommend that the proposed standards (Levy et al, 2009) be reviewed, updated and rewritten to acknowledge and reflect the lack of progress made in general practice with spirometry since publication. A realistic picture needs to be depicted, as change can only be made with investment in spirometry services once the current challenges and barriers to the procedure are acknowledged.

Further, it is recommended that all clinicians collaborate, acknowledge and understand each other's roles and make recommendations for mandatory accredited training in spirometry assessment and interpretation for *all* clinicians involved in the care of COPD within general practice. This would include robust assessment, supervisory support and regular assessment of ongoing competency. I acknowledge that the existing proposed standards (Levy et al, 2009) call for continual investment in primary care spirometry in order for spirometry to become more routine, for an accepted satisfactory level of experience and for maintenance of expertise within primary care. However, I would argue that additional recommendations need to be made on the need for GPs as employers to create a positive working environment for practice

nurses, promote professional development, and facilitate and be closely involved in service development for the chronic disease management of COPD. Only then can spirometry services progress in the long term.

I am keen for future involvement in the planning of continued professional development for both professions but as of yet, this has extended to the practice nursing profession only. Other recommendations for future education therefore would be for future spirometry training for both nursing and medical professions, to incorporate mentoring in clinical practice and regular update training, mirroring that of training for other clinical skills such as cervical cytology. Other recommendations would be that practice nurses and GPs are trained together to promote team working and reduce practice nurse isolation and disenfranchisement. Training in this way would strengthen inter-professional relationships and help to break down hierarchal relationships within the team.

7.4 Recommendations for Future Research

A recommendation for future research would be to repeat the research again within the UHB in a time frame of approximately ten years (twenty years post GMS Contract) to determine whether there have been developments or improvements within clinical practice for practice nurses undertaking spirometry assessment and interpretation for the chronic disease management of COPD. Utilisation of the same theoretical framework would also determine whether or not the practice nursing profession has become less disenfranchised, gained a collective voice and achieved a stronger identity within the gendered general practice environment.

Another future research recommendation would be to repeat the research on a larger scale, including all practice nurses working within all of the seven Local Health Boards in Wales (HOWIS, 2015). On a larger scale, the research findings could potentially confirm or disprove the research findings from my UHB, and be used as a framework for local or national improvements in the planning of continual professional development for both nursing and medical staff within general practice for future spirometry assessment and interpretation for the chronic disease management of COPD.

This research has demonstrated that stand-alone education for practice nurses, via attendance at study days, short courses or workshops is inadequate for the development of competence and confidence in clinical skills and expertise. Future long term research recommendations would be to research perceived barriers to the development of practice nursing expertise for other chronic diseases, utilising a similar multiple methods approach.

Maximum coverage of large, diverse geographical areas and accessing a difficult-to-reach population of practice nurses would be achieved and long term developments in care augmented by representing the practice nurse voice and empowering practice nurses by including their voices within future health care developments.

7.5 Recommendations for Future Practice

Recommendations primarily centre on changes to practice nurse education, inclusive of parallel training of GPs, with the strengthening of the practice nurse voice and reduction of practice nurse isolation in clinical practice. I am aware, though, that this can only happen if the practice nurses become more confident in their ability to effect change and develop the confidence to speak out and contribute actively to the future of spirometry services in general practice. The onus is therefore on the practice nurse to contribute to and participate in the development of general practice nursing. As the practice nurse role has developed so rapidly over the past ten years, this is not impractical or unachievable. Arguably, practice nurses are contributing actively to the shaping of services for other chronic disease areas such as diabetes: therefore, COPD should be no different.

Other recommendations include practice nurse representation on national policy-making committees to voice and present the reality of the challenges in clinical practice in the developing of spirometry assessment and interpretation services for accurate quality assessment of lung disease. Although this is happening at local level with my contribution to the development of spirometry services within my UHB, there needs to be change at a national level to raise the profile of the chronic disease management of COPD within general practice.

Only by acknowledging and recognising the reality of the situation can change be effected and improvements made in the long term. However, effective long term change is needed in parallel to the development of practice nursing as a profession. Davies (1995, p.181), describes nursing as a support function and a historical adjunct to the “real” business of the provision of medical care. There is a therefore a need for reduction in social isolation of practice nurses, a growth in professional confidence, strengthening of the practice nurse voice and uniformity of training before practice nursing can come in to its own, become politicised and challenge imbalances within the gendered general practice environment. Only then can practice nurses gain recognition within the wider nursing profession and the medical profession.

I have every intention of publishing my research findings to disseminate my recommendations for future practice and generate discussion on the current situation of general practice

spirometry. I am also planning to present my research at a respiratory nurses' conference later this year to disseminate my findings to nursing colleagues who share the same clinical interests and passion for spirometry as an assessment tool for chronic disease COPD management. As I stated at the beginning of my thesis, the respiratory academic body is still referencing the earlier out-of-date paper to which I contributed (Bolton et al, 2005) as current evidence for spirometry in Wales. New discussion surrounding general practice led spirometry needs to take place, parallel to the development of the role of the practice nurse in COPD chronic disease management. Only by the raising of the profiles of practice nurses and COPD as a chronic disease trajectory can long-term improvements to patient care be discussed, strategically planned and implemented. I want to make a difference to this historically neglected patient group and believe that my research findings have potential to contribute to the evidence base for both practice nursing and patient care in the long term.

Reflexive note

I do not claim to have an in-depth or extensive knowledge of feminist theory. As stated at the beginning of my thesis, I would describe myself as an "accidental feminist" in that feminism as a theoretical framework found me, rather than the standpoint of me deciding to apply feminist methodology from the outset of the research process. I feel that as layers of prejudice and my pre conceived, possibly negative attitudes towards feminist theory were peeled back, the micro and macro issues surrounding practice nurses and spirometry were exposed and the feminist theoretical lens enabled me to understand, even theorise, the lived experiences of the practice nurses. Feminism as a theoretical framework, in short, enabled me to contextualise the practice nurses' experiences and stories surrounding spirometry assessment within the historical development of the practice nurse role, rather than regarding spirometry simply as a "clinical skill" practice nurses were struggling to gain competence in. I therefore feel the research journey was enriched and bought to life by the serendipitous application of the feminist theoretical lens that allowed me to give voice to the practice nurse story and make theoretical implications for the development of future clinical practice.

References

Abbott P, Sapsford R. 2012. Ethics, Politics and Research. In: Sapsford R, Jupp V. eds. Data Collection and Analysis. Second Edition. Sage in association with The Open University: 291-312.

Ackerly B, True J. 2010a. Doing Feminist Research in Political and Social Science. Palgrave Macmillan.

Ackerly B, True J. 2010. Back to the future: feminist theory, activism, and doing feminist research in an age of globalization. Women's Studies International Forum. 33: 362-472.

Andrist LC, Nicholas PK, Wolf KA. 2006. A History of Nursing Ideas. Jones and Bartlett Publishers, Canada.

Anzueto A. 2010. Impact of exacerbations on COPD. European Respiratory Review. 19(116): 113-118.

Atkin K, Hirst M, Lunt N, Parker G. 1994. The role and perceived training needs of nurses working in general practice: observations from a national census of practice nurses in England and Wales. Journal of Advanced Nursing. 20: 46-52.

Bahl S, Milne GR. 2007. Mixed methods in interpretive research: An application to the study of the self concept. In: Belk RW. ed. Handbook of Qualitative Research Methods in Marketing. United Kingdom: Edward Elgar: 198-218.

Baldwin M, Williams P, Fletcher M. 2010. A novel method to estimate the economic impact of COPD in patients of working age. Poster presented at COPD 7 International Multi-disciplinary Conference, 2 July, 2010.

Barnes N, Calverley PM, Kaplan A, Rabe KF. 2014. Chronic obstructive pulmonary disease and exacerbations: clinician insights from the global Hidden Depths of COPD Survey. Current Medical Respiratory Opinion. 30(4): 667-84.

Barnett M. 2009. An Overview of assessment and management in COPD. British Journal of Community Nursing. 14(5): 195-201.

Bayliss D. 2014. The importance of effective teamwork in general practice. Practice Nurse. 44 (12)

Bell J. 2009. Doing Your Research Project. 4th Edition. Open University Press.

Bell C, Newby H. 1977. Doing Sociological Research. London. Allen and Unwin.

Bellamy D, Booker R. 2008. Chronic Obstructive Pulmonary Disease in Primary Care. 4th Edition. Class Publishing, London.

Bolton CE, Ionescu A, Edwards PH, Faulkner TA, Edwards SM, Shale DJ. 2005. Attaining a correct diagnosis of COPD in general practice. Respiratory Medicine. 99(4): 493-500.

Booker R. 2005. COPD, NICE and GMS: getting quality from QOF. Primary Health Care. 15 (9) November.

Booker R. 2008. Vital Lung Function. Your essential reference for the management and assessment of lung function. Class Health London.

Booker R. 2009. Interpretation and evaluation of pulmonary function tests. Nursing Standard. 23(39): 46-56.

Borg BM, Hartley MF, Fisher MT, Thompson BR. 2010. Spirometry training does not guarantee valid results. Respiratory Care Journal. 55(6): 689-94.

Brann M. 2011. Leading nursing from Its Dark Side of History. Nevada RN Information.19 (4):6-18.

Brannen J. 2002. Mixing methods: Qualitative and quantitative research. Avebury.

Brant C, Leydone G. 2009. The role of the health-care assistant in general practice. British Journal of Nursing. 18(15): 926-923.

Brennan 2005. Commentary. The social construction of "woman's work" nursing labour and status. Journal of Nursing Management. 13: 282-285.

British Lung Foundation. 2007. Invisible Lives. British Lung Foundation.

British Medical Association and NHS Confederation. 2003. Investing in General Practice: The New GMS Contract. BMA, London.

British Thoracic Society. 1993. Asthma Guidelines. British Thoracic Society.

British Thoracic Society. 1997. COPD Guidelines. British Thoracic Society.

British Thoracic Society and Scottish Intercollegiate Guidelines Network. 2012. British Guideline on the Management of Asthma. British Thoracic Society and Scottish Intercollegiate Guidelines Network.

Brooks A. 2007. Feminist Standpoint Epistemology. In: Hesse-Biber SN, Leavy PL. eds. Feminist Research Practice. Sage Publication: 53-82.

Broom A, Willis E. 2010. Competing Paradigms and Health Research. In: Saks M, Allsop J. eds. Researching Health. Qualitative, Quantitative and Mixed Methods. Sage Publications: 16-31.

Bryman A. 2008. Social Research Methods. Third Edition. Oxford University Press.

Bryman A. 2007. Barriers to integrating quantitative and qualitative research. Journal of Mixed Methods Research. 1(8): 8-22.

Buist S. 2006.COPD: A common disease that is preventable and treatable. Primary Care Respiratory Journal. 15: 7-9.

Buresh BG, Gordon S. 2000. From silence to voice: what nurses know and must communicate to the public. Cornwell University Press.

Cabrera NL. 2011. Using a sequential exploratory mixed-methods design to examine racial hyper-privilege in higher education. In: Griffin KA and Musus SD. (Eds) Using Mixed-methods approaches to study intersectionally in higher education. New Directions for Institutional Research no 151. San Francisco. Jossey-Bass: 77-91.

Calderon-Larragna A, Carney L, Soljak M, Bottle A, Bell D, Abi-Aad G, Aylin P, Majeed A. 2011. Association of population and primary healthcare factors with hospital admission rates for COPD in England: national cross-sectional study. Thorax. 66: 191-6.

Caldwell K, Atwal A, Cop G, Brett-Richards M, Coleman K. 2006. Preparing for practice: how well are practitioners prepared for teamwork. British Journal of Nursing. 15(22):1250-1254.

Calverley PMA. 2011. Taking the long view of COPD care. Primary Care Respiratory Journal. 20(2): 109-110.

Caracelli VJ, Greene J. 1997. Crafting mixed methods evaluation designs. In: Greene JC, Caracelli VJ. eds. Advances in mixed-method evaluation: The challenges and benefits of integrating diverse paradigms. New directions for evaluation. 74. San Francisco: Jossey-Bass: 19-33.

Carey, L. 2000. The Future of Practice Nursing. In: Carey L. ed. Practice Nursing. Balliere Tindall in association with the RCN: 308-330.

Chandler GE. 1992. The source and process of empowerment. Nursing Administration Quarterly. 16 (3): 65-71.

Chuckry A. Meta-Index and Archive of World Masterpieces of Literature, Philosophy, Religion, Formal and Empirical Sciences. Online. Available at: http://www.ditext.com/archive. Accessed 2 March 2016.

Cheek J, Rudge T. 1994. The panopticon revisited? An exploration of the social and political dimensions of contemporary health care and nursing. International Journal of Nursing Studies. 31(6): 583-591.

Cho YJ, Ryu H, Lee J, Park IK, Kim YT, Lee YH, Lee H, Hing DM, Seo JH, Bahk JH, Jeon Y. 2014. A randomised controlled trial comparing incentive spirometry with the Acapella device for physiotherapy after thoracoscopic lung resection surgery. Anaesthesia. 69(8): 898-1.

Cook J, Fonow MM. 1990. Knowledge and Women's Interests: issues of epistemology and methodology in feminist sociological research. In Nielson JM. Ed. Feminist Research Method: exemplary readings in the social science. Boulder, Co: Westview

Cooper BG. 2011. An update on the contra-indications for lung function testing. Thorax. 66: 714-723.

Cowan DT, Norman I, Coompamah VP. 2005. Competence in nursing practice: A controversial concept - A focused review of the literature. Nurse Education Today. 25: 355-362.

Cresswell JW. Plano-Clark VL, Gutmann ML, Hanson WE. 2003. Advanced mixed methods research designs. In: Tashakkori A, Teddlie C. eds. Handbook of mixed methods in the social and behavioural research. Thousand Oaks, Sage: 209-240.

Cresswell J. 2014. Research Design. Qualitative, Quantitative and Mixed Methods Approaches. Fouth Edition. Sage Publications.

Cresswell JWT, Plano-Clark VL. 2011. Designing and Conducting Mixed Methods Research. 2nd Edition. Sage Publications.

Crossman S. 2006. Practice nurses' needs for education since the advent of the new GMS. Practice Nursing. 17(2): 87-91.

Crossman S. 2009. Support Standards for General Practice Nursing. Practice Nurse. 38(6): 41-2.

Davies C. 1995. Gender and the Professional Predicament in Nursing. Pen University Press.

Davis DJ, Skaarup AM, Ringsted C. 2005. A pilot survey of junior doctors' confidence in tasks related to broad aspects of competence. Medical Teacher. 27(6): 548-552.

Davis P, Scott A. 2010. Health Research Sampling Methods. In: Abbott P, Sapsford R. eds. Data Collection and Analysis. Second Edition. Sage in association with The Open University: 155-173.

Delamont S. 2003. Feminist Sociology. London: Sage.

DeMarco RF and Roberts SJ. 2003. Negative behaviors in nursing – Looking in the mirror and beyond. American Journal of Nursing 103 (3): 113-116.

Denscombe M. 2011. The Good Research Guide for Small Scale Social Research Projects. Third Edition. Open University Press. Buckingham Philadelphia.

Department of Health. 1990. General Medical Services Council - new GP Contract. HMSO, London.

Department of Health. 1999. Agenda for Change – Modernising the NHS Pay System Joint Framework of Principles and Agreed Statement on the Way Forward. Online. Available at: http://www.dh.gov.uk/assetRoot/04/01/21/55/04012155.pdf Accessed 1 June 2014.

Department of Health. 2000. National Service Framework for Coronary Heart Disease. HMSO, London.

Department of Health. 2005. The National Service Framework for Long-Term Conditions. HMSO, London.

Department of Health. 2001. National Service Framework for Diabetes. HMSO, London.

Department of Health. 2011. An Outcomes Strategy for Chronic Obstructive Pulmonary Disease (COPD) and Asthma in England. HMSO, London.

Department of Health. 2015. The NHS Structure explained. HMSO, London. Online. Available at: http://www.nhs.uk/NHSEngland/thenhs/about/Documents/simple-nhs-guide.pdf Accessed 4 January 2016.

Dolan G. 2003. Assessing student nurse clinical competency. "Will we ever get it right". Journal of Clinical Nursing. 12(1): 132-141.

Dong D, Temple B. 2011. Oppression: A Concept Analysis and Implications for Nurses and Nursing. Nursing Forum. 46 (3): 169-176.

Donovan J. 2012. Feminist Theory. Fourth Edition. Continuum International Publishing Group. New York, London.

Duffin C. 2013. GPs forced to undergo spirometry training under proposed rules from NHS England. Online. Available at: http://www.pulsetoday.co.uk/200005394.article. Accessed 30 December 2013.

Durant-Law G. 2005. The Philosophical Trinity, Soft Systems Methodology and Grounded Theory. A paper presented to the Schools of Education and Community Studies, and Information Management and Tourism, Division of Communication and Education, the University of Canberra, on the 12th May, 2005.

East L, Jackson D, O'Brien L, Peters K. 2008. The benefits of computer-mediated communication in nursing research. Contemporary Nurse. 30: 83-88.

Edwards P, Wajcman J. 2005. The politics of working life. Oxford University Press.

Elliott MR. 2011. A Simple Method to Generate Equal-Sized Homogenous Strata or Clusters for Population-Based Sampling. Annals of Epidemiology. 21(4): 290-296.

Enright P, Schermer, T. 2013. Don't pay for poor quality spirometry tests. Editorial. Primary Care Respiratory Journal. 22(1): 15-16.

Fals-Borda O. 1991. Some basic ingredients. In: Fals-Borda O, Rahman MA. eds. Action and knowledge: Breaking the monopoly with participatory action research. New York: Apex Press: 3-12.

Fals-Borda O, Rahman MA. 1991. Action and knowledge: Breaking the monopoly with participatory action research. New York: Apex Press.

Faulkner TA. 2005. Implementation of a Nurse Led COPD Service to Improve Patient Care. (unpublished)

Finch J. 1984. It's great to have someone to talk to: the ethics of interviewing women. In Bell C, Roberts H. eds. Social Researching: Politics, Problems, Practice. London: Routledge and Kegan Paul: 70-88.

Fletcher K. 2006. Beyond dualism: Leading out of oppression. Nursing Forum. 41 (4): 50-58.

Foster P. 2012. Observational Research. In: Sapsford R, Jupp V. eds. Data Collection and Analysis. Second Edition. Sage in association with The Open University: 57-123.

Foucault M. 1977. Discipline and Punish. Harmondsworth: Penguin.

Frank TL, Hazell ML, Linehan MF, Morris J, Frank PI. 2007. The estimated prevalence of chronic obstructive pulmonary disease in a general practice population. Primary Care Respiratory Journal. 16: 169-73.

Freeman D. 2010. Diagnosis of COPD in Primary Care. Primary Care Respiratory Society UK.

Gale NK, Health G, Cameron E, Rashid S, Redwood S. 2013. Using the framework method for the analysis of qualitative data in multi-disciplinary health research. BMC Research Methodology. 13: 117: 1-8.

Garbett D. 2003. Science Education in Early Childhood Teacher Education: Putting Forward a Case to Enhance Student Teacher's Confidence and Competence. Research in Science Education. 33: 467-481.

Gatenby B, Humphries M. 2000. Feminist Participatory Action Research; Methodological and Ethical Issues. Women's Studies International Forum. 23(1): 89-105.

Gershon AS, Dolmage TE, Stephenson A, Jackson B. 2012. Chronic obstructive pulmonary disease and socioeconomic status: a systematic review. COPD. 9(3): 216-226.

Gillie A. 1963. Report of the sub-committee of the central health services council: the work of the family doctor (the GP's Charter). HMSO, London.

Hiles DR. 2008. Axiology. In: Given LM. ed. The Sage Encyclopaedia of Qualitative Research Methods. Volume 2. Sage in association with The Open University: 21-22.

Glass N. 1998. Becoming de-silenced and reclaiming voice: women nurses speak out. In: Keleher H, McNerney F eds. Nursing matters: Critical Sociological Perspectives. Churchill Livingstone, Sydney: 121-138.

Global Initiative for Chronic Obstructive Lung Disease. 2011. Global Strategy for the Diagnosis, Management, And Prevention of Chronic Obstructive Pulmonary Disease. Global Initiative for Chronic Obstructive Lung Disease, Inc.

Graham H. 1984. Women, Health and the Family. Brighton, Wheatsheaf.

Green J. 2010. The use of focus groups in research into health. In: Saks M, Allsop J. eds. Researching Health. Qualitative, Quantitative and Mixed Methods. Sage publications LTD: 112-132.

Greene JC. 2007. Mixed Methods in Social Inquiry. Jossey-Bass.

Greenfield S, Stilwell B, Drury M. 1987. Practice nurses: social and occupational characteristics. Journal of the Royal College of General Practitioners. 37: 341-345.

Greener M. 2011. Easing the burden of COPD: NICE Guidelines and new agents. Nurse Prescribing 9(2): 64-67.

Griffiths P, Murrells T, Dawoud D, Jones S. 2010. Hospital admissions for asthma, diabetes and COPD: is there an association with practice nurse staffing? A cross sectional study using routinely collected data. BMC Health Services Research 10(276): 1-11.

Guthrie B, McLean G, Sutton M. 2006. Workload and reward in the Quality and Outcomes Framework of the 2004 general practice contract. British Journal of General Practice. November: 836-841.

Halding A, Heggdal K, Wahl A. 2011. Experiences of self-blame and stigmatisation for self-infliction among individuals living with COPD. Scandinavian Journal of Caring Sciences. 25(1): 100-107.

Halpin D. 2011. Improving the management of COPD. British Medical Journal. 342: 1674.

Halpin D, O'Reilly JF, Connellan S, Rudolf M. 2007. Confidence and understanding among general practitioners and practice nurses in the UK about the diagnosis and management of COPD. Respiratory Medicine. 101: 2378-2385.

Hammersley M, Atkinson P. 2007. Ethnography principles in practice, Third edition. Routledge, London and New York. Hampson G. 2004. Practice Nurse Handbook. Fourth Edition. Blackwell Publishing.

Han MK, Kim MG, Mardon R, Renner P, Sullivan S, Diette GB, Martinez FJ. 2007. Spirometry utilisation for COPD: how do we measure up? Chest. 132 (2): 403-9.

Harding S. 1987. Is there a Feminist method? In: Harding S. ed. Feminism and methodology. Indiana University Press: 1-14.

Hart C. 2004. Nurses and Politics - the impact of power and practice. Palgrave Macmillan.

Hartmann H (1981) The Unhappy Marriage of Marxism and Feminism. In: Sargent ed. Women and Revolution. South End Press Political controversies Series: 15.

Hawkins P, Shohet R.2006. Supervision in the Helping Professions. 3rd Edition. Maidenhead: Open University Press.

Health and Social Care Information Centre. 2013. Statistics on Smoking: England, 2013. Health and Social Care Information Centre.

Healthcare Commission. 2006. Clearing the air: A national study of chronic obstructive pulmonary disease. Healthcare Commission.

Health of Wales Information Service. 2009. Online. Available at: http://www.wales.nhs.uk/ Accessed 14 June 2013.

Health of Wales Information Service. 2010. Online. Available at: http://www.wales.nhs.uk/ Accessed 16 June 2013.

Health of Wales Information Service. 2015. Online. Available at: http://www.wales.nhs.uk/nhswalesaboutus/structure Accessed 10 December 2015.

Heath I. 2004. The cawing of the crow… Cassandra-like, prognosticating woe. British Journal of General Practice. 54 (501): 320-321.

Health and Social Care Information Centre. 2015. ICD-10 5th Edition: Change Paper. Health and Social Care Information Centre.

Hesse-Biber SN. 2007a. The Practice of Feminist In-Depth Interviewing. In: Hesse-Biber SN, Leavy PL. eds. Feminist Research Practice. A Primer. Thousand Oaks, CA: Sage:111-148.

Hesse-Biber SN. 2007. Feminist research: Exploring the interconnections of epistemology, methodology, and method. In: Hesse-Biber SN. ed. Handbook of feminist research: Theory and Praxis. Thousand Oaks, CA: Sage: 1-28.

Hesse-Biber SN. 2010. Qualitative Approaches for Mixed Methods Practice. Qualitative Inquiry. 16(6): 455-468.

Hill M. 2006. The Practice Nurse Distance Learning Programme. 3rd Edition. London: St Bartholomew School of Nursing and Midwifery, City University.

Hill M C, 2010. Practice nursing: the unique nature of practice nursing. In: Cox CL, Hill MC. Eds. Professional Issues in Primary Care Nursing. Wiley Blackwell: 11-21.

Hinterberger A. 2007. Feminism and the Politics of Representation: Towards a Critical and Ethical Encounter with “Others”. Journal of International Women’s Studies. 8(2): 74-83.

Holland K, Middleton L, Uys L. 2012. Professional confidence: a concept analysis. Scandinavian Journal of Occupational Therapy. 19: 214-224.

Host University. 2012. Standard Operating Procedures: Standard Operating Procedures for Data Management. 23/4/12. Online. Available at: http://www.cardiff.ac.uk/racdv/resgov/Resources/v%204.0%2020120323.pdf Accessed 7 October 2012.

Howe KR. 2004. A critique of experimentalism. Qualitative Inquiry. 10: 42-61.

Hulko W. 2009. The time and context contingent nature of intersectionality and interlocking oppressions. Affillia: Journal of Women and Social Work. 24: 44-55.

Hutchinson M, Jackson D, Vickers M, Wilkes L. 2006. Workplace bullying in nursing: toward a more critical organizational perspective. Nursing inquiry. 13 (2): 118-126.

Jayaratne TE. 2000. The Value of Quantitative Methodology for Feminist Research. In: Hammersley M. ed. Social Research. Philosophy Politics and Practice. Sage Publications in association with The Open University: 109-123.

Jenkins C. 2009. Spirometry performance in primary care: the problem, and possible solutions. Primary Care Respiratory Journal. 18(3): 128-129.

Johansen S. 2007. Spirometry in primary care in a region of northern Norway – before and after a brief training course. Primary Care Respiratory Journal. 16(2): 112-114.

Johns DP, Burton D, Walters JAE, Wood-Baker R. (2006). National survey of spirometer ownership and usage in general practice in Australia. Respirology. 11:292-298.

Johnson RB, Onwuegbuzie AJ, Turner LA. 2007. Toward a definition of mixed methods research. Journal of Mixed Methods Research. 1(2): 112-3.

Joinson A. 2003. Understanding the Psychology of Internet Behaviour. Virtual Worlds, Real Lives. Palgrave Macmillan.

Jones RCM, Dickson-Spillman M, Mather MJC, Marks D, Shackell BS. 2008. Accuracy of diagnostic registers and management of chronic obstructive pulmonary disease: the Devon primary care audit. 2008. Respiratory Research. 9(62): 1-9.

Jones RCM. 2011. Hospital admission rates for COPD: the inverse care law is alive and well. Thorax. 66(3): 185-6.

Joo MJ, Lee TA, Weiss KB. Geographic variation of spirometry use in newly diagnosed COPD. 2008. Chest. 134 (1): 38-45.

Joo MJ, Sharp LK, Au DH, Lee TA, Fitzgibbon ML. 2013. Use of spirometry in the diagnosis of COPD: a qualitative study in primary care. COPD. 10(4): 444-9.

Kamil F, Pinzon I, Foreman MG. 2013. Sex and race factors in early-onset COPD. Current Opinion in Pulmonary Medicine. 19(2): 140-144.

Kanter RM. 1993. Men and women of the corporation. New York: Basic Books Inc.

Kaplan A, Pinnock H. 2010. Spirometry. Primary Care Respiratory Society UK.

Kelle U. 2001. Sociological explanations between micro and macro and the integration of qualitative and quantitative methods. Forum: Qualitative Social Research. 2(1): 5.

Kelly L, Regan L, Burton S. 1992. Defending the indefensible? Qualitative methods and Feminist Research. In: Hinds H, Phoenix A, Stacey J. eds. Working Out – New Directions for Women's Studies. London Falmer Press: 149-161.

Kelly L, Burton S, Regan L. 1994. Researching Women's Lives or Studying Women's Oppression? Reflections on What Constitutes Feminist Research. In: Maynard M, Purvis J. eds. Researching Women's lives from a Feminist Perspective. London, Taylor and French: 27-49.

Kenny AJ. 2005. Interaction in cyberspace: an online focus group. Journal of Advanced Nursing. 49(4): 414-422.

Kent C. 2001. COPD is not a Cinderella Disease. Nursing Times. 97(12): 22-24.

Kirsch G. 1999. Ethical Dilemmas in Feminist Research. The Politics of Location, Interpretation and publication. State University of New York Press.

Klein R. 1999. Markets, Politicians, and the NHS. British Medical Journal.319 (7222): 1383-4.

Kralik D, Price K, Warren J, Koch T. 2004. The ethics of research using electronic mail discussion groups. Journal of Advanced Nursing. 52: 537-545.

Kramer M, Schmalenberg C. 1993. Learning from Success: Autonomy and empowerment. Nursing Management. 24 (5): 58-64.

Kvale S. 1996. InterViews: An Introduction to Qualitative Research Interviewing. Thousand Oaks, California. Sage Publications.

Landman M. 2006. Getting quality in qualitative research: A short introduction to feminist methodology and methods. Proceedings of the Nutrition Society. 65: 429-433.

Lather P. 1991. Getting smart: Feminist research and pedagogy with/in the post modern. New York, Routledge.

Laws S, Harper C, Marcus R. 2003. Research for Development. London: Sage Publications.

Leese B. 2006. New opportunities for nurses and other health care professionals? A review of the potential impact of the new GMS contract on the primary care workforce. Journal of Health Organization and Management. 20: 525-536.

Legard R, Keegan J, Ward, K. 2010. In-Depth Interviews. In: Ritchie J, Lewis J. eds. Qualitative Research Practice. A Guide for Social Science Students and Researchers. Sage Publications: 138-170.

Leng S. 2013.The medical model versus the nursing model: a difference in philosophy. Online. Available at: http://www.kevinmd.com/blog/2013/05/medical-model-nursing-model-difference-philosophy.html Accessed 16 May 2016.

Lester H, Matharu T, Mohammed M, Lester D, Foskett -Tharby R. 2013. Implementation of pay for performance in primary care: a qualitative study 8 years after introduction. British Journal of General Practice. June: 408-415.

Letherby G, Zdrodowski D. 1995. “Dear Researcher”: The use of correspondence as a method within feminist qualitative research. Gender and Society. 9: 576-593.

Letherby G. 2002. Claims and Disclaimers: Knowledge, Reflexivity and representation in Feminist Research. Online. Available at: http://www.socresonline.org.uk/6/4/letherby.html Accessed 21 January 2014.

Letherby G. 2004. Quoting and Counting: An Autobiographical Response to Oakley. Sociology. 38(1): 175-89.

Levy M, Quanjer PH, Booker R, Cooper BG, Holmes S, Small I. 2009. Diagnostic spirometry in primary care: proposed standards for general practice complaint with American Thoracic Society and European Respiratory Society recommendations. Primary Care Respiratory Journal. 18(3): 130-47.

Lewis J. 2003. Design Issues. In Ritchie J, Lewis J. eds. Qualitative Research Practice. A Guide for Social Science Students and Researchers. Sage Publications: 47-76.

Loftland J, Snow D, Anderson D, Loftland LH. 2004. Analysing Social Settings: A Guide to Qualitative Observation and Analysis. Fourth Edition. Belmont CA: Sage.

Longbottom A, Chambers D, Rebora C, Brown A. 2006. A focused Rapid Review of the Role and Impact of the General Practice Nurse and Health Care Assistant within General Practice. Staffordshire: Staffordshire University.

Loudon I, Horder H, Webster C. 1998. General practice under the National Health Service. 1948-77. Clarendon Press, Oxford.

Luft S, Smith M. 1994. Nursing in General Practice. A Foundation Text. London: Chapman and Hall.

Lynch M. 2000. Against Reflexivity as an Academic Virtue and Source of Privileged Knowledge. Theory, Culture and Society. 17 (3): 3-26.

Macdougald N, King P, Jones A, Eveleigh M. 2001. A Tool Kit for Practice Nurses. Chichester: Aeneas.

Malden S. 2012. Iranian Nurses self-perception- factors influencing nursing image. Journal of Nursing Management. 20 (4): 551-560.

Manojlovitvch M. 2007. Power and Empowerment in Nursing: Looking Backward to inform the future. Online. Available at: http://www.nursingworld.org/MainMenuCategories/ANAMarketplace/ANAPeriodicals/OJIN/TableofContents/Volume122007/No1Jan07/LookingBackwardtoInformtheFuture.htmlWhile Accessed 21 November 2015.

Mansell I, Bennett G, Northway R, Mead D, Moseley L. 2004. The learning curve: the advantages and disadvantages in the use of focus groups as a method of data collection. Nurse Researcher. 11(4): 79-88.

Marchbank J, Letherby G. 2007. INtruduction to Gender. Pearson Education Limited.

Marshall A. 1994. Sensuous Sapphires: A Study of the Social Construction of Black Female Sexuality. In: Maynard M, Purvis J. eds. Researching Womens' Lives from a Feminist Perspective. Taylor Francis: 106-124.

Martin B. 2008. Spirometry. A Handbook for Health Professionals. Rosie Spence Publishers.

Maslow AH. 1966. The Psychology of Science: A Renaissance. New York: Harper and Row.

Matera MG, Cazzola M. 2012. Treatment of COPD: no longer nihilism but there is still an urgent need for new therapies. Current Opinion in Pharmacology. 12(3): 225-228.

Matheson LK, Bobay K. 2007. Validation of oppressed group behaviours in nursing. Journal of Professional Nursing. 23 (4): 228-234.

Matthews-King A. 2014. Local QOF replacement scheme frees GPs from "ticking all the boxes". Pulse. October 10.

Maynard M. 1994. Methods, Practice and Epistemology: The Debate about Feminism and Research. In: Maynard M, Purvis J. eds. Researching Womens' Lives from a Feminist Perspective. Taylor Francis: 10-26.

McDonald R, Campbell S, Lester H. 2009. Practice nurses and the effects of the new general practitioner contract in the English National Health Service: the extension of a professional project? Social Science and Medicine. April; 68(7): 1206-12.

McGregor W, Jabareen H, O'Donnell CA, Mercer SW, Watt GC. 2008. Impact of the 2004 GMS contract on practice nurses: a qualitative study. British Journal of General Practice. 58(555): 711-9.

McMahon S. 2007. Understanding community-specific rape myths: Exploring student athlete culture. Affilia. 22:357-370.

Mertens D. 2010. Transformative Mixed Methods Research. Qualitative Inquiry. 16(6): 469-474.

Mertens DM. 2013. What does a transformative lens bring to credible evidence in mixed methods evaluations? In: Mertens DM, Hesse-Biber S. eds. Mixed methods and credibility of evidence in evaluation. New Directions for Evaluation. Jossey- Bass: 27-35.

Mertens D, Wilson AT. 2012. Program evaluation theory and practice: A comprehensive guide. New York: Guilford.

Mies M. 2000. Towards a Methodology for Feminist Research. In: Hammersley M. ed. Social Research. Philosophy Politics and Practice. Sage Publications in association with The Open University: 109-123.

Millen D. 1997. Some methodological and epistemological issues raised by doing feminist research on non feminist women. Online. Available at: http://www.socresonline.org.uk/2/3/3.html Accessed 14 January 2014.

Miller SI, Fredericks M. 2002. Naturalistic Inquiry and reliabilism: A compatible epistemological grounding. Qualitative Health Research. 12(7): 989-989.

Morrell D. 1998. The NHS's 50th anniversary. Something to celebrate. As I recall. British Medical Journal. 317:40-45.

National Audit Office. 2008. NHS pay modernisation: new contracts for general practice services in England. Online. Available at: http://www.nao.org.uk/publications/0708/new_contracts_for_general_prac.aspx Accessed 6 June 2014.

National Clinical Guidance Centre. 2004. Chronic Obstructive Pulmonary Disease: Management of chronic obstructive pulmonary disease in adults in primary and secondary care. Clinical Guidance 12. London: National Clinical Guidance Centre.

National Clinical Guidance Centre. 2010. Chronic Obstructive Pulmonary Disease: Management of chronic obstructive pulmonary disease in adults in primary and secondary care. London: National Clinical Guidance Centre.

Nazir SA, Erbland M. 2009. Chronic obstructive Pulmonary Disease. An update on the Diagnosis and Management Issues in Older Adults. Drugs Ageing. 26(10): 813-831.

Nursing and Midwifery Council. 2015. The Code: Standards of conduct, performance and ethics for nurses and midwives. Nursing and Midwifery Council.

Oakley A. 1981. Interviewing Women: A Contradiction in Terms. In: Roberts H. ed. Doing Feminist Research. London, Routledge and Kegan Paul: 30-62.

Oakley A. 1993. Essays on Women, Medicine and Health. Edinburgh University Press.

Oakley A. 1999.People's way of knowing: Gender and methodology. In Hood S, Mayall B, Oliver S. eds. Critical Issues in Social Research: Power and prejudice. Philadelphia: Open University Press: 154-170.

Oakley A. 2004. Response to "quoting and counting: an autobiographical response to Oakley". Sociology. 38(1): 191-192.

Oakley A. 2005. The Ann Oakley Reader. Bristol: Policy.

O'Cathain A. Murphy E, Nicholl J. 2008. The quality of mixed methods studies in health services research. Journal of Health Services Research & Policy. 13(2): 92-98.

O'Donnell CA, Jabareen H, Watt GCM. 2010. Practice Nurse's workload, career intentions and the impact of professional isolation: A cross-sectional survey. BMC Nursing. 9:2.

Office for National Statistics. 2011. Health Inequalities Decennial Supplement 15. TSO, London.

Olender-Russo T. 2009. Creating a culture of regard: An antidote for workplace bullying. Creative Nursing. 15 (2): 75-81.

Ostlund U, Kidd L, Wengstrom Y, Rowa-Dewar. 2010. Combining qualitative and quantitative research within mixed method research designs: A methodological review. International Journal of Nursing Studies. 48: 369-383.

Parken A, Pcher E, Davies R. 2014. Working Patterns in Wales: Gender, Occupations and Pay. Welsh Government.

Phillips DC. 2006. A guide for the perplexed: scientific educational research, methodalotry, and the gold versus platinum standards. Educational Research Review. 1 (1): 15-26.

Philips DC, Burbules NC. 2000. Postpositivism and Educational Research. Rowman & Littlefield.

Pollock KD. 2012. Leeds LMC salaried GP Survey Report 2012. Online. Available at: http://offlinehbpl.hbpl.co.uk/NewsAttachments/PG/Leeds%20LMC%20Salaried%20GP%20Survey%20report%20%202012.pdf Accessed 20 January 2016.

Pope C, Mays N. 2009. Critical reflections on the rise of qualitative research. British Medical Journal. 339: 737-739.

Rabinowitz VC, Weseen S. 1997. Elu(ci)d(at)ing impasses: Reviewing the qualitative/quantitative debates in psychology. Journal of Social Issues. 53(4): 605-30.

Radin A, Cote C. 2008. Primary care of the patient with chronic obstructive pulmonary disease - part 1: front line prevention and early diagnosis. American Journal of Medicine. 121(suppl 7): s3-12.

Rafael AR. 1996. Power and caring: A dialectic in nursing. Advances in Nursing Science. 19 (1): 3-17.

Ralph D. 1988. Researching from the bottom: lesson of participatory research for feminists. In: Currie D. ed. From the Margins to the Centre: Selected Essays in Women's Studies. Saskatchewen: The Women's Studies Research Unit, University of Saskatchewan: 134-141.

Ramazanoglou C. 2002. Feminist methodology: Challenges and Choices. London, Sage.

Ramvi E, Davies L. 2010. Gender, mothering and relational work. Journal of Work Practice. 24 (4): 445-460

Reason P. 1994. Three approaches to participative enquiry. In: Denzin NK, Lincoln YS. eds. Handbook of qualitative research. Thousand Oaks, CA: Sage: 324-339.

Reed M. 2000. The Limits of Discourse Analysis in Organisational Analysis. Organisation. 7: 524-30.

Rees T. 1998. Mainstreaming Equality in the European Union. London: Routledge.

Reichardt CS, Cook TD. 1979. Beyond qualitative versus quantitative methods. In: Cook TD, Reichardt CS. eds. Qualitative and quantitative methods in evaluation research. Thousand Oaks, CA: Sage: 7-32.

Reinharz S. 2002. Feminist methods in social science. London: Oxford University Press.

Rennard SI, Vestbo J. 2006. COPD: the dangerous underestimate of 15%. Lancet. 367:1216-9.

Ritchie J, Spencer L, O'Connor W. 2003a. Analysis: Practices, Principles and Processes. In: Ritchie J, Lewis J. eds. Qualitative Research Practice. A Guide for Social Science Students and Researchers. Sage Publications: 199-218.

Ritchie J, Lewis J, Elam G. 2003b. Designing and Selecting Samples. In: Ritchie J, Lewis J. eds. Qualitative Research Practice. A Guide for Social Science Students and Researchers. Sage Publications: 76-109

Roberts S. 2000. Development of a positive professional identity: Liberating oneself for the oppressor within. Advanced Nursing Science. 5 (4): 21-30.

Roberts SJ, DeMarco R, Griffin M. 2009. The effect of oppressed group behaviours on the culture of the nursing workplace: a review of the evidence and interventions for change. Journal of Nursing Management. 17: 288-293.

Roberts N. 2015. QOF will remain part of seven-day GP contract, primary care minister confirms. Online. Available at: www.gponline.com/**qof**-will-remain-part-seven-day-gp.../1367250. Accessed 10 November, 2015.

Robinson F. 2008. New contract fails to reward practice nurses. Practice Nurse. 35(6):11-2.

Robson C. 2011. Real World Research. Third Edition. Wiley & Sons Ltd.

Rodriguez Hortal MC, Hjelte L. 2014. Time point to perform lung function tests evaluating the effects of an airway clearance therapy session in cystic fibrosis. Respiratory Care. 59 (10): 1537- 41.

Rossi A, Polese G. 2013. Indacaterol: a comprehensive review. International Journal of Chronic Obstructive Pulmonary Disease. 8: 353-363.

Royal College of General Practitioners (RCGP). 2004. Practice Nurses RCGP Information Sheet No 19. Royal College of General Practitioners.

Royal College of Nursing. 2009. Community Nursing Strategy. Consultation Response from the Royal College of Nursing, Wales. Presented to the Welsh Assembly Government 19 June, 2009.

Rubin H, Rubin I. 2005. Qualitative Interviewing: The Art of Hearing Data. 2nd Edition. London: Sage.

Sandelowski M. 2000. Devices and Desires: Gender, Technology and American Nursing. Chapel Hill, University of North Carolina Press.

Schultz PR, Meleis AI. 2007. Nursing Epistemology: Traditions, Insights, Questions. The Journal of Nursing Scholarship. 20(4): 217-221.

Shahab L, Jarvis MJ, Britton J, West R. 2006. Prevalence, diagnosis and relation to tobacco dependence of chronic obstructive pulmonary disease in a nationally representative population sample. Thorax. 61:1043-47.

Shapiro M, Setterlund D, Cragg C. 2003. Capturing the complexity of women's experiences: A mixed-method approach to studying incontinence in older women. Affilia. 18(1): 21-33.

Sharma A. 2010. COPD in Primary Care. Radcliffe Publishing LTD.

Sheridan N, Kenealy T, Salmon E, Rea H, Raphael D, Schmidt-Busby J. 2011. Helplessness self blame and faith may impact on self management in COPD: a qualitative study. Primary Care Respiratory Journal. 20(3): 307-14.

Silverman D. 2001. Interpreting Qualitative Data. London: Sage.

Sorheim IC, Johannessen A, Gulsvik A, Bakke PS, Silverman EK, DeMeol DL. 2013. Gender differences in COPD: are women more susceptible to smoking effects than men? Thorax. 65(6): 480- 485.

Spencer L, Ritchie J, O'Connor W. 2003. Analysis: Practices, Principles and Processes. In: Ritchie J, Lewis J. eds. Qualitative Research Practice. A Guide for Social Science Students and Researchers. Sage Publications: 199-218.

Spivak GC. 1997. "Poststructuralism, Marginality, Postcoloniality and Value. In Mongia.P. (ed). Contemporary Postcolonial Theory: a reader. London: Arnold. : 198-222.

Spratley E, Johnson A, Sochalski J, Fritz M, Spencer W. 2000. The registered nurse population: Findings from the national sample survey of registered nurses. Washington., DC.

Stanley L, Wise S. 1989. "Back into the personal" or: our attempt to construct "feminist research. In Bowles G, Klein R. eds. Theories of Women's Studies. Routlege: 192-209.

Stanley L, Wise S. 1993. Breaking out Again: Feminist Ontology and Epistemology. Second Edition. London, Routledge and Kegan Paul.

Steuten LMG, Cruetzberg EC, Hubertus JM, Wouters EF. 2006. COPD as a multi-component disease: Inventory of dyspnoea, underweight, obesity and fat free mass depletion in primary care. Primary Care Respiratory Journal 15: 84-91.

Stewart J, O'Halloran C, Roger Barton J, Singleton SJ, Harrigan P, Spencer J. 2000. Clarifying the concepts of confidence and competence to produce appropriate self-evaluation measurement scales. Medical Education. 34: 903-909.

Stewart AJ, Cole ER. 2007. Narratives and Numbers: Feminist Multiple Methods Research. In: Hess-Biber SN. ed. Handbook of Feminist Research: Theory and Praxis. Thousand Oaks, CA: Sage: 327-44.

Strong M, South G, Carlisle R. 2009. The UK Quality and Outcomes Framework pay-for-performance scheme and spirometry: rewarding quality or just quantity? A cross-sectional study in Rotherham,, UK. BMC Health Services Research. 9(108): 1-5.

Suruki R, East L, Cockle S, Sampson T, Davis K, Price D. 2010. Low recordings of spirometry values in patients with COPD despite NICE guidelines in UK primary care setting. American Thoracic Society International Conference Abstracts. Online. Available from: http://www.atsjournals.org/doi/abs/10.1164/ajrccmconference.2010.181.1_MeetingAbstracts.A4122. Accessed 12 June 2013.

Sweetman D, Baidee M, Cresswell JW. 2010. Use of the transformative framework in mixed methods studies. Qualitative Inquiry. 16(6): 441-454.

Tashakkori A, Teddlie C. 2003. Handbook of Mixed-Methods in Social and Behavioural Research. Thousand Oaks, Sage.

Teddlie C, Tashakkori A. 2009. Foundations of mixed methods research: Integrating quantitative and qualitative approaches in the social and behavioural sciences. Thousand Oaks, CA: Sage.

The Queen's Nursing Institute. 2016. General Practice Nursing in the 21st Century: A Time of Opportunity. The Queen's Nursing Institute.

Thomas S 1998. Transforming Nurses' Anger and Pain: Steps Toward Healing. Springer, New York, NY.

Thomas J, Sabit R, Thomas P, Hildrup S, Dempsey S, Faulkner T, Janes N, Benfield G. 2014. Recommendations for Spirometry in Primary Care in Wales. Respiratory Medicine National Specialist Advisory Group.

Thomas P, White A. 2007. Should nurses be leaders of integrated care? Journal of Nursing Management. 15 (6); 643-664.

Thomas JM. 2014. Why having so many women doctors is hurting the NHS: A provocative but powerful argument from a leading surgeon. Online. Available from: http://www.dailymail.co.uk/debate/article-2532461/Why-having-women-doctors-hurting-NHS-A-provovcative-powerful-argument-leading-surgeon.html Accessed 20 January 2016.

Tinson S. 2011. Evaluating a general practice nurse foundation programme. Practice Nursing. 22(5): 267-270.

Traynor M. 2006. Discourse analysis: theoretical and historical overview and review of papers in the Journal of Advanced Nursing 1996-2004. Journal of Advanced Nursing. 54(1): 62-72.

Turner C, Keyzer D, Rudge T. 2007. Spheres of influence or autonomy? A discourse analysis of the introduction of nurse practitioners in rural and remote Australia. Journal of Advanced Nursing. 59(1): 38-46.

UK Clinical Research Collaboration. 2006. UK health research analysis. London. UK Clinical Research Collaboration.

Upton J, Madoc-Sutton H, Loveridge C, Sheeikh A, Walker S, Fletcher M. 2010. Assessment of psychosocial problems in primary care COPD patients. British Journal of Nursing. 19(9): 554-557.

Upton J, Madoc-Sutton H, Sheikh A, Frank TL, Walker S, Fletcher M. 2007. National survey on the roles and training of primary care respiratory nurses in the UK in 2006: are we making progress? Primary Care Respiratory Journal. 16(5): 284-290.

Valentine p. 2001. Gender perspectives on conflict management strategies of nurses. Journal of Nursing Scholarship. 33 (1): 69-74.

Valenza-Demet G, Vamenza MC, Carbrera- Martos I, Torres- Sanchez I, Revelles-Moyano F. 2014. The effects of a physiotherapy programme on patients with a pleural effusion: a randomised controlled trial. Journal of Clinical Rehabilitation. 28(11): 1087-95.

Vinson JA. 2000. Nursing's epistemology revisited in relation to professional education competencies. Journal of Professional Nursing. 16(10): 39-46.

Vogt WP. 2008. The Dictatorship of the Problem: Choosing Research Methods. Methodological Innovations Online. 3(1).

Waddington K. 2010. Collaboration and working with the multidisciplinary team and agencies. In: Cox CL, Hill MC. Eds. Professional Issues in Primary Care Nursing. Wiley Blackwell: 209-222.

Walby S, Greenwell J. 2009. Medicine and Nursing: Professions in a Changing Health Service. Sage Publications.

Walby S. 2011. The Impact of Feminism on Sociology. Online. Available from: http://www.socresonline.org.uk/16/3/21.html Accessed 14 January 2014.

Wallace LD, Troy KE. 2006. Office-based spirometry for early detection of obstructive lung disease. Journal of American Academic Nurse Practitioners. 18(9): 414-421.

Walters JA, Hansen EC, Walters EH, Wood-Baker, R. 2008 (a). Under diagnosis of chronic obstructive pulmonary disease: a qualitative study in primary care. Respiratory Medicine. 102(5): 738-43.

Walters JA, Hansen EC, Johns DP, Blizzard EL, Walters EH, Wood-Baker R. 2008 (b). A mixed methods study to compare models of spirometry delivery in primary care for patients at risk of COPD. Thorax. 63: 408-414.

Watson R, Stimpson A, Topping A, Porock D. 2002. Clinical competence assessment in nursing: a systematic review of the literature. Journal of Advanced Nursing. 39(5): 421-431.

Wedzicha JA, Wilkinson T. 2006. Impact of chronic obstructive pulmonary disease exacerbations on patients and payers. Proceedings of The American Thoracic Society. 3(3): 218-221.

Wedzicha JA, Seemungal TA. 2007. COPD Exacerbations: defining their cause and prevention. Lancet. 370(958): 786-96.

Welsh Government. 2012. Welsh Health Survey 2012: Annual report. National Centre for Social Research.

Welsh Government. 2014. Together for Health - A Respiratory Health Delivery Plan. Welsh Government.

Western S. 2008. Leadership: A Critical Text. London: Sage.

White P, Wong W, Fleming T, Gray B. 2007. Primary care spirometry: test quality and feasibility and usefulness of specialist reporting. British Journal of General Practice. 57(542): 701-705.

White P. 2010. COPD in Primary Care: a time of opportunity. British Journal of General Practice. 60(576): 477-478.

Wilkin D, Gillam S, Smith K. 2001. Tackling Organisational Change in the new NHS. British Medical Journal. 322 (7300): 1464-1467.

Wilkinson S, Kitzinger C. 1996. Representing the Other: a feminism and psychology reader. London: Sage.

Williams M. 2000. Interpretivism and Generalisation. Sociology. 34: 209-24.

Wilson M, Sapsford R. 2012. Asking Questions. In: Sapsford R, Jupp V. eds. Data Collection and Analysis. Second Edition. Sage in association with The Open University: 93-123.

Witz A. 1990. Patriarchy and Professions: The Gendered Politics of Occupational Closure. Sociology. 24(4): 675-690.

World Health Organisation. 2008. World Health Statistics. Geneva: World Health Organisation.

World Health Organisation. 2010. International Classification of Diseases (ICD). Geneva: World Health Organisation.

Working in Partnership Programme. 2008. SNAPshot Survey of UK Practice Nurses. London: WiPP.

Yawn BP, Enright P, Lemanske RF, Israel E, Pace W, Wollan P, Boushey H. 2007. Spirometry can be done in physicians' offices and alters clinical decisions in management of asthma and COPD. Chest. 132: 1162-1168.

Young M. 2000. Five faces of oppression. In: Adams M, Blumenfield, R, Casteneda R, Hackman M, Peters m, Zuniega X. eds. Readings for diversity and social justice. New York: Routlegde: 35-49.

Young L. 2008. Incompetence and empty pockets: All in a day's work. British Journal of Nursing. 17 (1): 6.

Zoumot Z, Jordan S, Hopkinson NS. 2014. Emphysema: time to say farewell to therapeutic nihilism. Thorax (online). Available at: http://thorax.bmj.com/content/early/2014/07/01/thoraxjnl-2014-205667.full.pdf+html Accessed 30.10.14

Appendix 1

Critical Analysis Grid

Author	Research Question	Population	Sample Size	Research Approach	Method of Data Collection	Findings	Limitations	Critical comments
Borg et al. Australia 2010.	To determine whether a fourteen- hour spirometry training course provides sufficient skill to produce valid results, and if follow-up training improves test validity	Nurses and physiotherapists from rural primary care health facilities	Fifteen participants from ten sites	Quantitative	Quantitative	Fourteen-hour spirometry training alone does not provide sufficient skill to perform spirometry to ATS criteria, short-term follow-up essential for improving test validity	Participants chosen, not volunteered, Portable spirometers did not display flow volume loops and time/volume loops so researchers and clinicians unable to determine acceptability of trace Small scale study, generalisability may be compromised	Participants informed in advance of when reassessments due Low spirometry usage noted: barriers listed as lack of support in workplace, lack of time and having multiple roles Twelve contactable

Joo et al 2013. United States of America	To identify attitudes and barriers of primary care physicians to performing spirometry	Eighteen primary care physicians	Twelve	Qualitative	Four focus groups, each with three primary care physicians	Scepticism about spirometry Availability of spirometry not a barrier, lack of concern about misdiagnosis of COPD	Health system barriers to spirometry use not identified	Small scale study Small focus groups Lack of generalisability Work in same system, similar patient populations
White et al. 2007. UK	To assess feasibility and usefulness of remote specialist reporting of primary care spirometry	South London with lists of >6000	Six General practices, total of 312 tests July, August and September 2005	Quantitative two-hour training sessions then two three-hour individual clinical tuition sessions, followed by a final session by spirometry manufacturer.	Emailing test documents to respiratory specialists for interpretation and to the research team, reports e-mailed back to practice clinicians	Quality of primary care spirometry unsatisfactory; remote reporting of spirometry may be feasible 52% unacceptable tests 30% disagreement with primary and secondary clinicians about diagnosis	Data collected two years post GMS contract Small study, cannot be representative of primary care as a whole IT literacy reported to be challenging	Electronic reporting may potentially have influenced outcomes as reported difficulties with IT Clearly identified factors of issues affecting spirometry quality
Walters et al. 2008 (b) Australia	Comparison of two models of spirometry delivery to target at risk group in primary care	Seventy-four urban/suburban and twenty rural general practices	Six urban and two rural practices	Mixed methods	Focus group discussion to validate quantitative of impact of two models of	Opportunistic spirometry by visiting trained nurses (TN) increased and improved spirometry performance	No data on spirometry refusal, assumption of 25% Random selection of	No information on what training external nurses had undergone and if the trained nurses worked in the capacity of full-time respiratory nurses, therefore more

		Nurses and GPs			spirometry delivery	compared with usual care. Poorer quality spirometry with in-house training of two hours.	practices but may not be generalisable to all practices. Practices all training practices, potential increased spirometry knowledge	knowledgeable and skilled. Non-comparable teams. TN vs. missed UC teams of GPs, Nurses and HCAs.
Bolton et al. 2005. UK	Spirometry availability, staff training and use of spirometry	General practices in Wales Practice nurses and GPS	371 (72%) general practices	Quantitative	Questionnaire	Majority of spirometry by practice nurses, lack of confidence in majority. Most confident practices reported greatest training. Underuse of spirometry for diagnosis	GPs and nurses, not solely nursing study Self-reported nature of questionnaire	Dated. Data collected in 2003-4 prior to GMS Contract.
Suruki et al. 2010. UK	To determine use of spirometry in primary care for COPD diagnosis	General Practice Research Database	19,172 newly diagnosed patients	Quantitative	Electronic search of patient records via read coding	36% patients had spirometric confirmation of COPD three months before and twelve months after diagnosis	Inaccuracy in primary care coding may affect results	Data collected from 2004 until 31 Dec 2007. Patients in latter part of study may be still undergoing investigation for spirometry so coding may not be confirmed

							Human error in data collection	
Strong et al. 2009. UK	To determine whether high QOF achievement with spirometry targets is associated with quality spirometry	General practices in Rotherham	3, 217 patient records: random sub-sample of 761 to determine proportion whose spirometry met BTS standards	Quantitative	Electronic search of patient records, manual search paper records by specialist nurses	50% had had spirometry in past twelve months. 12% did not appear to have COPD. 31% spirometry traces of acceptable standards. QOF therefore measures quantity, not quality	Potential for human error in documentation and data collection. Generalisation of findings	Reliant on notes availability/documentation; however, useful in that recommendations are made for improvement in future target years.
Walters et al. 2008(a) Australia	Under-diagnosis of COPD in primary care	Patients with COPD and their GPs in two general practices in Tasmania	Thirty-two patients (fourteen patients then interviewed) Sixteen GPs	Qualitative	Focus group Semi-structured interviews and focus groups	Incorrect diagnosis, delayed diagnosis, poor communication, therapeutic nihilism underuse of spirometry	May not have identified whole COPD populations in surgeries 232 patients assessed with spirometry, only fourteen interviewed	Participants with very severe disease declined participation, predominantly female participants
Halpin et al. 2007 UK	To assess confidence and understanding	GPs and practice nurses (PNS)	100 respondents, (60% PNs)	Quantitative	Telephone Questionnaire	GPs more confident at interpreting spirometry in 2001	Not same staff/practice for each data collection:	Data collected 2001 and 2005. Ten-minute PN interview, 15-20 GPs yet more PNs

	in diagnosis and management of COPD.					and 2005, but not PNs. GP confidence not related to competence. Training and education recommended	No means of assessing competence	interviewed, both asked same questions. Clinical practice moved on. Practices selected at random, not stated how. Subjective
Upton et al. 2007 UK	National survey on roles and training of practice nurses undertaking COPD care.	Practice nurses	500	Quantitative Nested survey from 3000 practices	Questionnaire	12% of nurses had any form of accredited training, 49% diagnosing and managing COPD had formal accredited training: highest in smaller practices, decreasing with practice list size increasing. Marked lack of GP supervision	Practice nurses from smaller practices of less than 3,000 under-represented: only 3% response	Geographical distribution high Contextually good follow-up from the Bolton paper; however, data collected in 2006 and within a rapidly developing field, with more training available, so results are of limited relevance to 2104. Intensive follow-up on non-respondents increased uptake but may have affected validity of responses, as questionnaires not anonymous
Jones et al 2008 UK	Accuracy of diagnostic registers: the Devon	Patients on COPD registers from 3 North	632	Quantitative	Electronic search of patient records by	158 patients (27%) incorrectly	Patients may not have been representative	Narrow geographical distribution

	primary care audit	Devon Practices			specialist nurses. Patients invited to attend for reversibility testing, on screen questionnaires assessing dyspnoea and exacerbation rate	diagnosed with COPD Of the 422 patients with a final diagnosis of COPD, 25 patients (6%) had mixed disease of asthma and COPD.	of all COPD patients. Patients with more severe disease and co-morbidities may have been under represented as unable to attend clinic	Data collected 2005-6 so dated at time of publication. Useful data in that inaccuracy of chronic disease register demonstrated
Garbett 2003. New Zealand	How knowledge influences confidence and competence to teach in an early childhood setting.	Student teachers (female) Aged between 18 and 50 years	100	Quantitative	Questionnaire, Likert scales of confidence and competence Then 73 multi choice science knowledge test to determine actual and perceived competence	Student teachers unaware of how much they didn't know and how this would affect teaching ability. Negative attitudes, misunderstanding and misconceptions can limit ability	Female gender only. No description of method of data analysis	Wide range of nationalities Lacking methodology Hypothesis that schooling affected by gender and ethnicity, attribution of science as a "masculine" subject vs. a "feminine" subject

Cowan et al. 2005. UK	Defining competence, Utilisation of competence Attenuation of employer and educator tension	n/a	n/a	Literature review	Literature databases from 1995-2003.	Recommendations for holistic conception of competence identified as complex combinations of knowledge, performance, skills values and attitudes.	Dated. Focus on hospital nursing only. Literature search limited, Only two databases used, narrow search parameters	No mention of confidence Published prior to advanced practice roles No comparison to other disciplines Sense of nurse as isolated practitioner assessing own competence
Davis et al 2005. Denmark.	Assessing junior doctors' confidence in tasks related to broad aspects of confidence	Newly qualified doctors at pre-registration, senior house officers, specialist registrars and GP trainees	297	Quantitative	Anonymous questionnaire	56% response Good representation from range of roles Different learning curves for different roles	Broad range of junior doctors, questionable transference to UK	Survey anchored to specific concrete tasks within physician roles, narrow focus to encompass broad range of skills/training/roles
Holland et al 2012. South Africa.	Analysis of the term "professional confidence"	n/a	n/a	Literature review of thirty-one articles	Four health sciences databases from 2000-2010	Confidence, self-confidence, professional self-confidence and self-efficacy used in literature as	Link between professional identity, confidence and competence	Critical comments Subjectivity of confidence. Small-scale literature review

						surrogate terms - synonyms for professional confidence	highlighted but specific area of occupational therapy.	

Appendix 2. Ethical and Governance Challenges

Following favourable review from the school's REC in October 2012, I encountered a problem secondary to my employment status within the UHB. I was technically not a UHB staff member and was therefore technically an outsider to the UHB. I was informed by the UHB Research and Development Department that I had to apply for further ethical approval from the National Institute for Health and Social Care Research (NISCHR) for permission to use the UHB intranet and the Senior UHB Nurse's time in cascading my questionnaire.

My "invisibility" as a researcher within the UHB was further compounded by negative feedback from the NISCHR panel, which demonstrated little understanding of the role of doctoral nursing research in clinical practice. Criticism was given of the sample size, and it was recommended that I increase the research sample to include all practice nurses in Wales. Criticism was also made of my intention to assess clinical competency in **qualitative** interviewing and that the statement regarding clinical competency disclosure could be off-putting to nurses participating in the research. This was in contradiction to the school's REC, which had recommended the inclusion of this paragraph as a means of safeguarding me as a researcher. The NISCHR panel concluded by recommending that I discuss my protocol and ethical section with someone who had ethical experience. On appeal to the UHB Director of Research and Development, the panel feedback was struck off. Six months after favourable ethical review from the school REC, approval was given for utilisation of the Senior UHB nurse's time and my use of the UHB intranet.

The extra work in applying to the NISCHR with the resulting negative feedback was onerous and demoralising. Neither my researcher nor my clinician role had been recognised or acknowledged within the UHB and I felt that I had well and truly fallen "between the cracks". My experience demonstrated to me how anomalous the role and voice of the practice nurse and nurse researcher is within the UHB. This was also an example of power imbalance, where medical positivist research is privileged and readily recognised, with clear pathways of internal and external UHB ethical approval, in comparison to primary care led nursing research.

However, I recognise that as I was the first practice nurse researcher to undertake research at doctorate level within the history of the UHB, no protocols or pathways were in place to inform ethical approval. My experiences have been positive, however, in that I have given a voice to future practice nurse researchers, in that my researcher voice and anomalous role working within, yet not directly employed by, the UHB has been acknowledged and recognised. On reflection, this situation was transitional. However, it demonstrated to me how centrally situated I was within the marginalised, oppressed practice nursing community and also reinforced the challenges in the liberating and empowering of practice nurses in the

future by contributing to the knowledge base of the practice nursing culture and COPD chronic disease management.

Appendix 3 Questionnaire

Spirometry Assessment and Interpretation in Primary Care

Please answer all the questions, following instructions to skip questions when indicated. Please submit your questionnaire when completed. Thank you very much for taking the time to support and participate in my research.

1. Do you undertake routine Spirometry assessment for chronic disease management of COPD patients?

- ◯ Yes
- ◯ No

If you have answered No, there is no need to proceed with the survey. Thank you for your participation

2. Have you undertaken formal training on Spirometry assessment and/or interpretation?

- ☐ Yes
- ☐ No

If you have answered No please go to question 4

3. Please describe the training you have received (tick all that apply)

- ☐ One Day Training Course
- ☐ Two Day Training Course
- ☐ One Week Training Course
- ☐ Diploma Course
- ☐ Degree
- ☐ In House Training
- ☐ Not Applicable

Other (please specify)

Page 1

Spirometry Assessment and Interpretation in Primary Care

4. Do you feel confident in undertaking the Spirometry procedure?

	Not at all confident					Highly confident
On a scale of 1-6, ranging from 1 (not at all confident) to 6 (highly confident), please tick your level of confidence with the procedure	○	○	○	○	○	○

If you have answered Highly Confident, please go to question 7

5. If you have ticked anything other than Highly Confident in Question 4, please explain why (tick all that apply)

- ☐ Lack of Training
- ☐ Lack of Clinical Time
- ☐ Lack of Nursing Team Support
- ☐ Lack of General Practitioner Support
- ☐ Lack of Practice Manager Support

Other (please specify)

6. If you have ticked anything other than Highly Confident in Question 4, please state what you would ideally like to have to improve confidence in undertaking the Spirometry procedure

- ☐ More In HouseTraining
- ☐ More External Training
- ☐ More Clinical Time
- ☐ More Nursing Team Support
- ☐ More General Practitioner Support
- ☐ More Practice Manager Support

Other (please specify)

Spirometry Assessment and Interpretation in Primary Care

7. Do you/are you expected to interpet the Spirometry trace as part of your work?

◯ Yes ◯ No

If you have answered No please go to question 11

8. Do you feel confident in interpreting the Spirometry trace?

	Not at all Confident					Highly Confident
On a scale of 1-6, ranging from 1 (Not at all Confident) to 6 (Highly Confident), please tick your level of confidence in spirometry interpretation	◯	◯	◯	◯	◯	◯

If you have answered Highly Confident, please go to question 11

9. If you have answered anything but Highly Confident, in Question 8, please explain why (tick all that apply)

- ☐ Lack of Training
- ☐ Lack of Clinical Time
- ☐ Lack of Nursing Team Support
- ☐ Lack of General Practitioner Support
- ☐ Lack of Practice Manager Support
- ☐ Not Applicable

Other (please specify)

10. If you have answered anything else than Highly Confident in Question 8, please state what you would ideally like to have to improve confidence in interpreting the Spirometry trace

- [ ] More In HouseTraining
- [ ] More External Training
- [ ] More Clinical Time
- [ ] More Nursing Team Support
- [ ] More General Practitioner Support
- [ ] More Practice Manager Support
- [ ] Not Applicable

Other (please specify)

11. What guidance/support mechanisms for spirometry assessment and/or interpretation do you use in your clinical workplace? (tick all that apply)

- [ ] National Guidelines
- [ ] UHB Guidelines
- [ ] General Practitioner
- [ ] Nursing Team Member

Other (please specify)

12. How helpful are the guidance/support mechanisms in supporting you with Spirometry assessment and interpretation?

- ◯ Extremely Helpful
- ◯ Very Helpful
- ◯ Moderately Helpful
- ◯ Slightly Helpful
- ◯ Not at all Helpful

Other (please specify)

Spirometry Assessment and Interpretation in Primary Care

13. Have any processes been introduced at work to support your learning needs with Spirometry assessment and/or interpretation?

- ◯ Yes
- ◯ No

If you have answered No please go to question 15

14. If you have answered yes to question 13, what processes have been put in place to support your learning needs. Please tick the boxes that apply

- ☐ In House Training with Mutli Disiplinary Team
- ☐ In House Training with GP Clinical Lead for Spirometry
- ☐ In House Team Meeting
- ☐ External Training with GP Clinical Lead for Spirometry
- ☐ External Training with GP Clinical Lead For Spirometry

Other (please specify)

15. How do you feel about Spirometry assessment and interpretation? Please tick all that apply

- ☐ Spirometry is an essential tool for COPD chronic disease management
- ☐ Spirometry is an additional unwelcome tool for clinical practice
- ☐ I want to become more skilled with Spirometry assessment and interpretation
- ☐ I feel overwhelmed with Spirometry in general
- ☐ Spirometry has changed my clinical practice for the better
- ☐ Spirometry is essential for tracking COPD disease progression
- ☐ Spirometry puts me off COPD care
- ☐ I feel enthusiastic and motivated with COPD care and Spirometry
- ☐ Spirometry is essential for pharmacological management of COPD

Spirometry Assessment and Interpretation in Primary Care

16. How long have you worked as a Practice Nurse?

- ◯ 0-5 years
- ◯ 6-10 years
- ◯ 11-15 years
- ◯ 16+ years

17. How many patients are registered at your practice?

- ◯ 1,000 - 5,000
- ◯ 5,100 - 8,000
- ◯ 8,100 - 11,000
- ◯ 11,000+

18. Do you work in a practice that is

- ◯ Urban
- ◯ Rural
- ◯ Would Prefer Not to Say

Thank you for completing the questionnaire

Appendix 4 Participant E-mail Request

Chronic Obstructive Pulmonary Disease: Accurate spirometry assessment and interpretation for chronic disease management in General Practice: what are the barriers for practice nurses?

I would like to invite you to take part in my research study. Before you decide, I would like you to understand why the research is being done and what it would involve for you.

Lung function testing (spirometry) is a relatively new procedure for primary care nurses following the working changes to primary care nursing post the GMS Contract in 2004. Prevalence of Chronic Obstructive Pulmonary Disease (COPD) within the community is variable, suggestive of inconsistent service provision within primary care. Although spirometry assessment and interpretation is integral to the chronic disease management of COPD, there is no nursing research on any challenges and barriers to accurate spirometry testing and interpretation by practice nurses. I am keen to explore this area further, as my long-term aim is to improve the standards of nurse-led respiratory care in General Practice and promote uniformity of care for patients suffering with COPD.

The research has been given a favourable opinion by the ********* School of Nursing and Midwifery Studies Research Ethics Committee, and has been approved by the R&D office in ********* University Health Board (UHB). The document accompanying this e-mail provides more information about the research and contact details should you have any questions or wish to discuss the research or your participation further.

I am asking all practice nurses within ********* UHB to voluntarily participate in my research. The research will be in two stages, and it is entirely up to you to decide to participate. I cannot promise that the research will benefit you immediately, but the information may help to improve the management of people with COPD in the long term. It is my intention to publish the findings of my research but I would be happy to discuss my research findings with you prior to publication on request.

I would be grateful if you could spare a maximum of ten minutes to assist me in data collection for the first stage of my research by following the link below, completing and then submitting the questionnaire. All answers you provide will be anonymous, as your e-mail address will not be stored by Surveymonkey who will be used for the questionnaire. All questionnaire data will therefore be anonymous and data confidentiality promoted by storage of password protected data files within the university portal. Data will be destroyed after fifteen years in line with (Host) University policy on data and destruction of data.

Regarding the second phase of the research, I would be grateful if you could contact me if you are willing to participate. An explanation of the second phase is given in the accompanying research information sheet but I am happy to discuss any additional queries or provide any further information. My supervisor is Dr Jane Harden and she can be contacted at (Host) University on (****) ******* should you have an additional questions.

Finally, I would like to take this opportunity to thank you in advance for supporting my research.

Yours sincerely

Trudy Faulkner

E-mail: FaulknerTA@hoste-mail

Work: ***** 561808

Appendix 5 Participant Information Sheet

Chronic Obstructive Pulmonary Disease: Accurate spirometry assessment and interpretation for chronic disease management in General Practice: what are the barriers for practice nurses?

Chronic Obstructive Pulmonary Disease (COPD), although not a new disease entity, has only been on the primary care agenda since 2004, following the changes to primary care after the GMS Contract. As practice nurses are now providing the majority of chronic disease management in primary care, many have had a steep learning curve over the past nine years in the assessment, monitoring and management of patients suffering from COPD.

Spirometry (lung function testing) is a relatively new procedure for practice nurses post the GMS contract. There is evidence that primary care service provision for chronic disease management of COPD is challenging for nurses and is non-uniform throughout Wales. However, there is no nursing research on the challenges and barriers to accurate spirometry testing and interpretation by practice nurses, and I am keen to explore this area further, as my long-term aim is to improve the standards of nurse-led respiratory care in General Practice.

All practice nurses working within ****** University Health Board (UHB) will be approached via the intermediary of the Senior Nurse for the UHB and asked to participate within the research via e-mail. The research will be in two phases: phase one will involve quantitative data collection via questionnaire, and phase two will involve qualitative data collection via face-to-face semi-structured interviews.

Participation within the research is entirely voluntary, and all paper/transcript data collected with be stored in a secure locked cupboard, accessible only to the researcher. Electronic data will be password protected and encrypted using software which meets industry standard FIPS 140-2. The database management system will also be password protected. Destruction of data after fifteen years will conform to (Host) University Guidelines on operating procedures for data management (2012).

<u>Phase Two</u>

I would welcome your support in volunteering to assist my research for the second phase, which will be semi-structured interviews. The interviews will be recorded but made anonymous to promote confidentiality and protect your identity. I am the only person who will be aware of your real identity. The interviews will be transcribed but the only two people who have access to the tapes will be myself and my supervisor, Dr Jane Harden, based at (Host) University. Transcripts of the interview may be included in the thesis/future publications but anonymity will be maintained at all times.

The interview site will be at your time and convenience. Two weeks prior to the interview, written confirmation of the time and venue will be given, and on the day of interview, you will have the opportunity to ask any questions or raise concerns about the research prior to signing a consent form for participation. Parameters for the interview will be discussed prior to you

signing the consent form; however, should any information be disclosed throughout the course of the interview that demonstrates a significant lack of competence and could potentially adversely impact on patient care, the researcher reserves the right to contact your clinical lead.

You have a right to refuse to answer any of the questions, and also to withdraw from the interview at any time. You also have the right to withdraw your data with no explanation.

However, I would like to stress to you that your clinical skills and knowledge are not being assessed but that the aim of the interview is data collection as a means to identify what measures need to be put in place, not to necessarily help you, but to help colleagues and ultimately benefit patient care in the future.

Finally, if you are willing to participate in my research, my contact details are below. I look forward to hearing from you and please contact me should you have any issues you would like to discuss further.

Yours sincerely

Trudy Faulkner

E-mail: FaulknerTA@hostuniversity

Work: ***** 561808

Appendix 6 Consent Form

Practice Nurse Identification Number:

CONSENT FORM

Title of Project:

Chronic Obstructive Pulmonary Disease: Accurate spirometry assessment and interpretation for chronic disease management in General Practice: what are the barriers for practice nurses?

Name of Researcher: Trudy Faulkner

Please initial all boxes

1. I confirm that I have read and understand the information sheet, version **3** for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily. ☐

2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason, or withdraw my data with no explanation for the withdrawal. ☐

3. I understand that relevant sections of data collected and transcribed, may be looked at by the researcher's supervisor, Dr Jane Harden, from (host) University where it is relevant to my taking part in this research. I give permission for this individual to look at the data. ☐

4. I agree to take part in the above study. ☐

_____	21/06/13	_____
Name of Participant	Date	Signature
Trudy Faulkner	21/06/13	----------
Name of Person taking consent	Date	Signature

Appendix 7 Semi- Structured Interview Protocol

Aim:

i. To collect rich detailed data qualitative data for analysis via semi-structured interview

Objective:

i. To explore in depth problems and issues associated with accurate spirometry assessment and interpretation that have been highlighted from quantitative data analysis
ii. To gain in-depth knowledge of the issues faced by practice nurses in accurate spirometry assessment and interpretation within General Practice for the purposes of chronic disease management of COPD

Procedure

- At the start of the interview, the research information sheet will be discussed and written participant consent gained.
- The interviewer will make every attempt to put the participant at ease and ensure that the surrounding environment is comfortable, quiet and free from interruptions.
- The interviewer will stress that the focus is on the participant's views and beliefs on spirometry testing in primary care only, that the participants' clinical skills and knowledge are not being assessed and that all responses will be valid to the research.
- The interviewer will outline the parameters of the research and stress also that discussion of accuracy of chronic disease registers is not pertinent to the project
- The interviewer's role will be to draw out all relevant responses, to be neutral to the subject of spirometry assessment and interpretation by practice nurses, whilst also displaying interest in the subject.
- Questioning will be as open-ended as possible, with questioning techniques such as verbal and non-verbal prompting to encourage each participant to communicate underlying beliefs attitudes and values.
- As the interview is semi-structured, questions will be phrased and asked in the order that seems appropriate at the time, according to the practice nurse's knowledge of the subject and level of engagement with the interview.

Questions

- A guided list of questions will facilitated using the framework taken from Kvale's (1996) nine types of qualitative interview questions:

    1) Values of interviewee, of groups, of organisation
    2) Beliefs of interviewee, of others, of group
    3) Behaviours of interviewee, of others
    4) Formal and informal roles, of interviewee of others
    5) Relationships of interviewee, of others
    6) Places and locales
    7) Emotions, particularly of the interviewee, but also possibly of others
    8) Encounters
    9) Stories

Legard et al (2003) describe good interviewing as a combination of open questions with content mapping and content mining. In the context of the project, content mapping with the use of very wide open questions will aim to map the dimension of practice nurses' roles in the level of respiratory care provided within the team, inclusive of spirometry assessment and interpretation. Content mining, with the use of broad and open questions, will involve a narrower focus such as practice nurses' broader feelings about spirometry for the chronic disease management of COPD in clinical practice, the meaning spirometry holds for them, and their perceptions of barriers or difficulties in providing a good spirometry trace, and interpreting the trace in clinical practice.

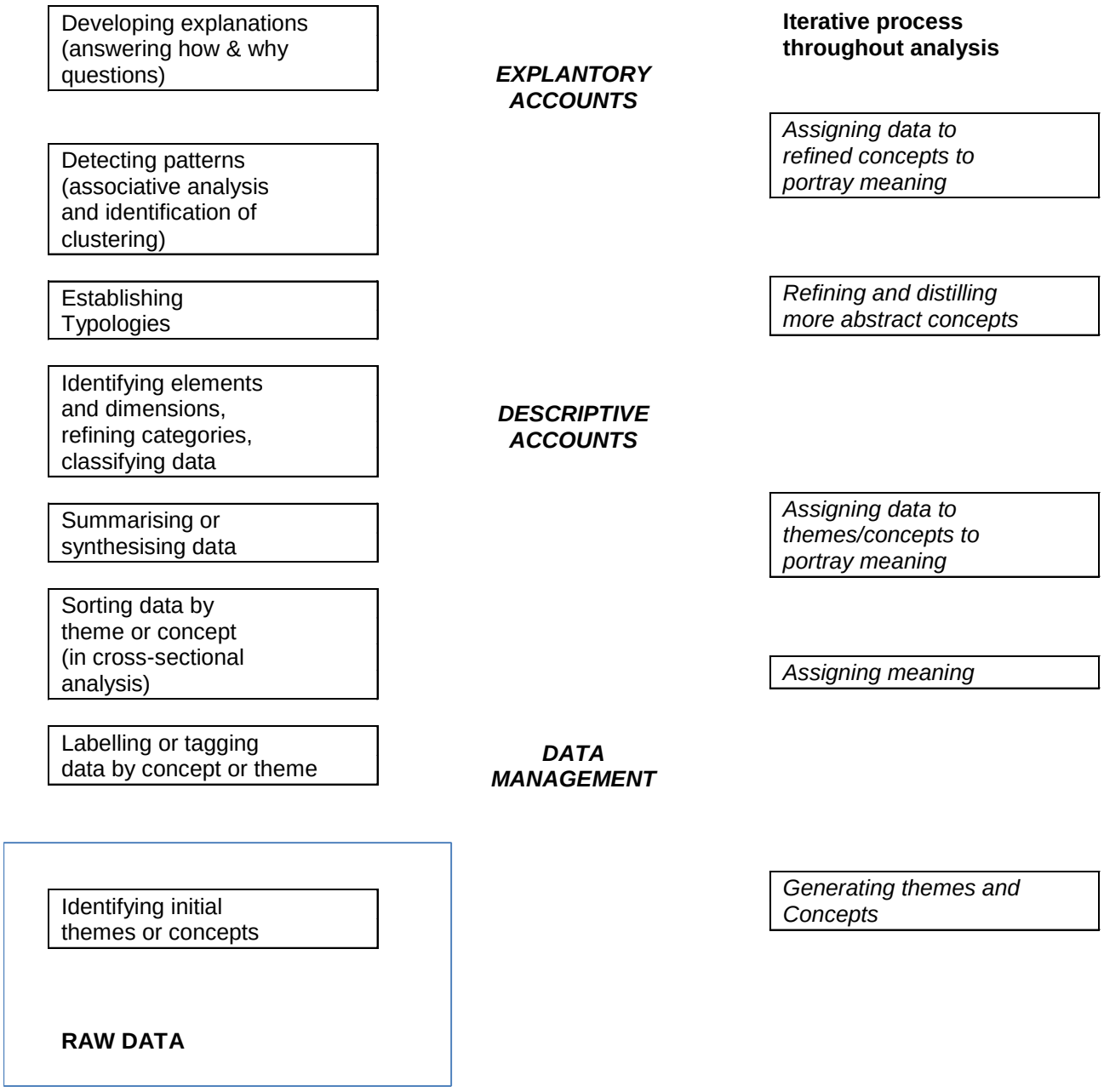
Appendix 8 Interview Schedule and Semi-Structured Interview Questions

Interview Schedule	*Questions*
Opening topics to ease participants into the interview. Determine the practice nurse's scope of practice with spirometry to provide context for the later stages of the interview.	*Tell me about any training you have undertaken for spirometry assessment and/or interpretation?* *Tell me about your role with spirometry in the practice?*
Ask and explore the participant's views of spirometry in clinical practice. Exploration of (any) positive and negative views relating to their clinical practice and views on their organisation's beliefs.	*How do you feel about the use of spirometry as a tool in clinical practice?* *Do you feel spirometry is valued by the organisation?*
Ask about the practice nurse's perception of their role within the wider general practice team, relating to spirometry assessment and/or interpretation.	*Do you feel spirometry is "shared" by the whole general practice team?* *Do you feel supported in clinical practice and can refer to other team members if you have any problems or queries with spirometry?*
Ask about guidelines/ resources used in clinical practice. To support and inform clinical practice.	*Do you use any guidelines to help you with spirometry assessment and/or interpretation?* *If so which guidelines?* *How useful are they?* *Knowledge about* *Experience/use of; views about* *Do you access any other support such as from colleagues or external specialist sources* *How useful are the guidelines/support measures you use?*

Explore any issues relating to perceived barriers to the spirometry procedure in clinical practice: • Explore perceived barriers to both spirometric procedure and interpretation according to individual practice nurse's scope of clinical practice.	*Is there anything that immediately comes to mind that you find frustrating with the spirometric procedure/interpretation?* *Do you feel there are any barriers present with your day to day clinical management of spirometry in practice?*
• Ask about and explore the concept of competence and confidence relating to spirometry assessment and/or interpretation.	*What are your thoughts as a clinician on competence and confidence with spirometry in general?* *Do you think there is a relationship between competence and confidence?*
Introduce thoughts about the future. Ask for suggestions on how spirometry in general practice could be future developed.	*Is there anything in an ideal world that you would like to change or improve as far as spirometry is concerned in clinical practice?* *Do you have any particular thoughts on future training needs to enable you to develop a spirometry service further?*
Seek overall summary of the practice nurse's attitudes or experiences. Conclude the interview.	*Is there anything you would like to add regarding spirometry that we haven't talked about?* *Is there anything you would like to add regarding your role in the general practice team?*

Appendix 9
An Illustration of the Stages and Processes Involved in a Qualitative Analysis

(Ritchie & Lewis 2003)



1. Data Management

Reading and listening to the recordings and also cross-referencing reflective notes that I had made immediately after each individual interview enabled me to immerse myself in the data. There was so much raw data from the nine practice nurses that it was initially overwhelming. A conceptual frame or "index" (Ritchie et al, 2003, p. 222) was constructed by identification of a link between categories, grouping of the categories themes thematically and sorting them according to different levels of generality so that the index had a hierarchy of themes and subthemes. These themes and subthemes were changed and moved around several times until I was satisfied that there was conceptual clarity and that there were no obvious areas of overlap or omissions.

The overall index contains 22 sub-themes, grouped under six main substantive headings. Gale et al (2013) highlight the importance of looking out for the unexpected in inductive coding to challenge the developing analysis and to make the analysis stronger by reconciling and explaining anomalies in the data. Ritchie et al (2003a), describe the "other "category (p. 222) in each subset to provide an identifier for uncovered issues that arise within the broad subject area covered. The health care assistant role was the "other" in this example as it was an unexpected theme that was mentioned by more than one practice nurse.

1. **Professional Details**
   1.1 Training undertaken
   1.2 Role with spirometry assessment
   1.3 Role with spirometry interpretation

2. **Service Related**
   2.1 Views on spirometry in clinical practice
   2.2 Positive /negative views on organisational value of spirometry
   2.3 Perception of role within team, specific to spirometry assessment/interpretation

3. **Barriers to Spirometry Assessment/interpretation**
   3.1 Causes and nature
   3.2 Effects/difficulties experienced/feelings about
   3.3 Views/feelings about current arrangements
   3.4 Changes, how occurred and ability to effect change
   3.5 Confidence in clinical practice
   3.6 Competence in clinical practice
   3.7 Competence versus confidence; views and feelings.

4. **Existing help and support**
   4.1 Knowledge about
   4.2 Experience/use of; views about
   4.3 Reasons for not using

5. **Potential help/support/services**
   5.1 What is needed for future service development

5.2 What would make a difference
5.3 Views about specific changes to practice nurse role
5.4 Other suggestions for future change

6. **Other key issues (not covered above)**
   6.1 Personal
   6.2 Service related

Immersion within the raw data enabled the next step of analysis which was that of "multi indexing" (Ritchie et al, 2003a, p. 226) within the subheadings. Some revisions of the conceptual framework were also made at this point to reduce the complexity of indexing. For example, as the health care assistant role was an unexpected finding on preliminary analysis, an "Other key issues" category was created to keep the finding separate from other categories to minimise analytical distraction.

Below is an excerpt of one of the interviews with Diane to illustrate the multi indexing. Some details have been omitted to preserve anonymity and some passages (such as initial opening statements and parameters of interview topics) not included to enable focus on the raw data and indexing. The excerpt starts on her describing her role with spirometry in her general practice:

Everything that I do...I do the test and everything is referred on to the GP. I don't make any decisions myself or take any lead in it... you know... I just do the spirometry. I do the annual reviews but no acute cases or anything. I don't really interpret the trace either, just look at it. ***1.2, 1.3, 2.3***

So you undertake the test only?

Yes. Everybody is referred... every single one I put to the head and pass over to the lead GP.

What training did you have to undertake spirometry procedure?

I did the - what is it? Asthma & Respiratory two day course ***1.1***

Did you find it helpful?

I wouldn't be able to do it without it.

How long have you been doing spirometry?

About 3 years now. I found that was a bit of a blur really... there was so much to learn as it wasn't just spirometry, it was all new to me.... it was the whole process of COPD. It was all crammed in.

Do you feel you have become more skilled?

In the beginning I felt very isolated because the doctor that was a clinical lead was taking it on as a new role as well, so I found that she was learning and in the beginning I think we were helping each other rather than me getting the support on-site. ***2.3, 3.2***

How did that make you feel?

That was quite daunting really as I didn't feel I had any real support in the beginning I mean obviously X has learnt a lot now and she is much better at the role and I think I'm better at the role so between us now I don't think it's too bad.. ***2.1****,* ***3.1, 3.2, 3.3***

So you feel your sense of isolation has gone?

Not gone, no but better. Still there though. To stop isolation would be to have people come in.... and give on site help. ***3.2, 5.1***

People?

Someone who can look at a trace and say yes, that's good or bad and I would recommend this or that. It's really difficult at times to know what to do with them that's why I send everything to the GP ***5.1, 5.2, 5.4***

Do you use any guidelines to support you in spirometry assessment?

Well I am aware of the NICE Guidelines obviously but as I don't make decisions I send everything to the GP. I make the occasional comment on the trace that's all. I do not get involved in the decision making. I don't think they are helpful with spirometry as patients are not text book are they ***4.1, 4.2, 4.3***

Going back to your lead GP, are you saying you have grown together professionally?

Yes, I think we have ***2.3, 3.3***

Do you feel that you are well supported when you have any issues?

No it's time. She's not always here when I am here. It's again I find that we could do with a bit more allocated time to discuss patients and do things. I haven't got time to wait outside doors so everyone I send all the spirometry goes to her so I assume she is going to read through what I've put and make changes. If there is anyone that I am concerned about I always ask them to rebook with the doctor afterwards and see them for a change and I will put in the review "query needs medication change" or if they haven't had a CXR for a while I'll put "patient

not had a chest x-ray" and I've asked the patient to go and see the GP for a review following what I have done with them. ***2.3, 3.1, 3.3***

Let's focus on your role with the actual procedure. How comfortable do you feel undertaking the procedure?

I mean there's definitely some that I record that I don't think it's an accurate thing. I mean I had one referred to me for spirometry the other day by the GP. The patient had Alzheimer's and it doesn't matter what I was saying to them they couldn't get it right. So I had to write not suitable and I sent the thing off but I put not suitable for spirometry and I think there is quite a few people that it doesn't matter how...there are people as well who are trying to get a bad result because they want benefits. You can see it's...it's twisted you know? It's alright as a tool; I don't think it's the be all and end all in COPD. ***2.1, 2.2, 3.1, 3.2, 3.6***

As a clinician do you value spirometry as a procedure?

I think it's got values.... I mean.... I think interpreting it and having the expertise within the practice can sometimes fall down. I don't think everybody is up to it. I am the only one that does it, the Healthcare Assistant will do the reversibility and spirometry but then there has been an issue with her recording as she's not able to record the results on there, or she is putting them on wrong and that's time consuming as she keeps coming back to me and saying "how did you say to put them on". ***2.1, 2.2. 6.2***

Do you feel spirometry is shared and understood by the general practice team?

I'm not sure myself how good the GP's are as well at evaluating what's been done at the end of it either. I mean X has now taken the lead, X was before, but if one of the other doctors looks at it I'm not sure that all the doctors are treating people appropriately after that either and interpreting. Sometimes you think...you see who has asked for it and if it's going back and you think, well... they will end up on the COPD register when they are not COPD patients. I just think sometimes it's a bit disheartening. ***2.1, 2.2, 3.2, 3.3, 3.5***

Also, it doesn't matter how many times you tell people, you still get people ring up our receptionists who will book the patients in and when they come in they have a chest infection and you have to send them away again. So there is a lot of wasted time I find on it. The equipment is expensive stuff and again it's the cleaning and the time afterwards to have allocated to know that I need to finish this and straight away I'm back onto another one. I have no time allocated to clean up and sort out afterwards before the next patient, and sort out after doing the clinics and things. I tend to do all that in my own time. Don't get me wrong, I'm not after extra time because sometimes you get a failed appointment and you can use

that time to do it. So I think to input every little aspect leads to a lot of wasted time because you don't know if someone's going to come or not. Do you see what I mean? I mean it's people and we don't know what people are going to do, do we? ***2.1, 2.2, 2.3, 3.1, 3.2, 3.3***

What would you like, in an ideal world to change, to improve your spirometry service in the future?

Up-to-date equipment I would like a new one (spirometer). The one we have is out of date. It's actually got the old guidelines so it will say moderate when it's severe, so I have to adjust everyone that I take but again it's finance for the new updated one. **5.1, 5.2**

Any other changes you would like?

I would like to have regular updates... at least annual updates. I do go to anything that's put on by the respiratory reps in the evenings to try and keep it up but I think I would like formal updates and I think it would help to keep going over and refreshing and hearing on a formal basis rather than... I mean I do go to every one up there but I think I am the only one in the practice that does go to regular updates in the evenings on the unpaid informal things. ***4.2, 5.1, 5.2, 5.4***

So what we are talking about is protected education time. Would that be just you or what that be the team as well?

Yes. I think whatever lead they have got, not just spirometry and COPD but whatever you are doing I think there should be formal updates on a regular basis to keep, you know standards up. ***5.1, 5.2, 5.4***

The next step was to refine the categories using the index and the learning gained through the indexing during the process of data immersion. This enabled a set of thematic charts to be created. Each main theme and its associated subtopics being were plotted on a separate chart, each respondent being allocated a row in the chart, whilst each subtopic was displayed in a separate theme.

The aim of the thematic charts was to summarise the key points of each piece of data whilst retaining its context and the language in which it was expressed. Enough data and context was included to understand the point being made, whilst also ensuring that the charts became complex and too in depth. The overall aim of the thematic chart being to serve the purpose of a "viewing platform" (Ritchie et al, 2003a) for the data.

This was a time-consuming and complex stage of analysis with overlapping categories and sub themes that seemed to make the process more complex as time went on. However, it was the deep familiarisation with the raw data, also the application of the principles of feminist theory as the methodological framework that enabled a picture to emerge through analysis, and the themes become clearer. Repeated access to the transcripts and my reflexive diary enabled the triggering of insights into and questions about the data. An example given with the health care assistant role. This was initially an unclear and unexpected subject.

Below is an example of an indexed thematic chart (chart one) in progress using the raw data from three of the practice nurses, for the purpose of this appendix. This indexed thematic chart entitled “service related”.

	2.1	**2.2**	**2.3**
	Views on spirometry in clinical practice	**Positive /negative views on organisational value of spirometry**	**Perception of role within team, specific to spirometry assessment & interpretation**
Nicola	Spirometry is only as good as the person who is performing it and the person that’s showing the patient how to perform it. It’s actually it’s made me grow more as a clinician. I was on my own from the start, so I have had to grow, I’ve had to read and I’ve had to learn because there wasn’t, there wasn’t the expertise within the practice as far as chronic disease goes from a GP point of view, you know, for the support.	I was asked the other day to do spirometry on a very elderly lady in a care home who is also demented and you know... sometimes the GPs can’t realise the limits themselves in spirometry. The organisation as a whole values it though. I was on my own from the start, so I have had to grow, I’ve had to read and I’ve had to learn because there wasn’t the expertise within the practice as far as chronic disease goes from a GP point of view.	I’m very lucky actually, because I get to choose my own appointment times. I can have as long as I like for spirometry. If a GP refers a patient say for a 10 minute spirometry well I can say “no, that’s not enough time”. I don’t really refer to other members of the team within the practice. Occasionally I will ask the GPs for assistance but normally what happens now if I’m stuck then I will refer into secondary care.
Chris	I feel it’s a very valuable tool, it distinguishes	Some of the GPs are keen on it and others have no idea at all, that’s my understanding.	I am not interpreting the spirometry but giving the doctors a bit of an idea

	between the different conditions... Obviously I feel it's a major part of my role. I couldn't manage without you know being able to do it.	As a whole of course they value the interpretation you know, obtaining those results and for their patients when they are going through the assessment process, but I'm not... it's a horrible thing to say but I don't always think they know as much as I do	by marking on the trace if it has improved or deteriorated you know. I think the practice nurse is valued regarding spirometry That is my role and that is what I am paid to do
Sharon	The whole team realises that it's an important tool for respiratory assessment.	There is varied understanding amongst my colleagues. I feel quite confident myself but I'm not sure everybody feels as confident as I do, that can be a bit of a problem. I think again with the nurses there is a lot of confusion around COPD checks and diagnostic spirometry and getting their heads around the differences between the two	It's more of a nurse's domain to be honest. That's why when I do a spirometry myself, I always look at the results and I go to the doctor with the print out and tell them what I want really. Because they do value the nurse's opinions and they do realise that we are better trained in spirometry. It gives me some pride in my work to know that it is something that I own. There are certain areas that a nurse's domain really that we can feel quite proud that they're good, at if you know what I mean.

2. <u>Descriptive accounts. Defining elements and dimensions, refining categories and classifying data.</u>

Ritchie et al (2003a, p.237) describe three key steps involved in the next stage of data analysis:

- *Detection* in which the substantive content and dimensions of a phenomenon are identified
- *Categorisation* in which categories are refined and descriptive data assigned to them
- *Classification* in which groups of categories are assigned to "classes" usually at a higher level of abstraction.

On immersing myself within the columns in the thematic charts, different elements, constructs and categories started to be identified. I highlighted data within columns using coloured pens to isolate different emerging themes, at the same time, making separate notes on a blank

piece of paper to help in determining similarities and differences in the data. I was able to identify broader key categories and assign the data to new categories using the highlighted text. Decisions were made about where the data belonged and whether or not each piece of paper provided a category, or was a characteristic of one already recorded. I struggled with this stage of analysis as there was overlapping of categories, with the exception of the category of the health care assistant undertaking spirometric assessment. This was separated as a stand-alone category initially as it was considered to be relevant but initially not associated with any of the other categories.

Below is an example of the utilisation of a framework for descriptive analysis (chart two). Although the raw data from all the practice nurses was used within the descriptive framework analysis, for the purpose of this appendix, data from the same three practice nurses is illustrated, as in the previous section. The first stage of abstraction (Column B) demonstrates how descriptions have stayed close to the original data. Column C demonstrates the more abstract categorisation where "labels" have been assigned to data that has moved beyond the original text and data has started to be presented in a more conceptual way. For example, "If a GP refers a patient say for a 10 minute spirometry well I can say "no, that's not enough time" has been categorised as "expressing good fortune in basic ability to control appointment time."

Column A	**Column B**	**Column C**
Data charted in column 2.3 Perception of role within team, specific to spirometry assessment & interpretation	**Elements identified**	**Categories/classes**
Nicola I'm very lucky actually, because I get to choose my own appointment times. I can have as long as I like for spirometry. If a GP refers a patient say for a 10 minute spirometry well I can say "no, that's not enough time". I don't really refer to other members of the team within the practice. Occasionally I will ask the GPs for assistance but normally what happens now if I'm stuck then I will refer into secondary care.	Chooses own appointment times Awareness of length of procedure Sometimes uses GP as resource, more commonly refers patients to secondary care	Expressing good fortune in basic ability to control appointment time Expressing luck in ability to speak out and make change Working on own mostly Bypassing in house support for secondary care support. Unilateral decision making
Chris. Not so much interpreting but giving the doctors a little bit of an idea. As I said, I am not interpreting the spirometry but giving the	Not interpreting spirometry but showing awareness of readings	Lack of confidence in ability to interpret spirometry trace

doctors a bit of an idea by marking on the trace if it has improved or deteriorated you know. I think the practice nurse is valued regarding spirometry That is my role and that is what I am paid to do	Helping guide GPs with interpretation Feels valued as an employee who is paid to undertake spirometry	Lack of voice in speaking to colleagues Lack of communication with GPs, written communication only Role defined as employee within organisation, spirometry as task undertaken by employee
Sharon. It's more of a nurse's domain to be honest. That's why when I do a spirometry myself, I always look at the results and I go to the doctor with the print out and tell them what I want really. Because they do value the nurse's opinions and they do realise that we are better trained in spirometry. It gives me some pride in my work to know that it is something that I own. There are certain areas that a nurse's domain really that we can feel quite proud that they're good, at if you know what I mean.	Spirometry in nurse domain only Sense of ownership over task. Has ability to direct care Feels important undertaking spirometry	Demarcation of nursing role with spirometry – ownership of task and of COPD chronic disease management Suggestion of insular working, GP role to provide prescription only Self-pride at owning spirometry, sense of importance at being more skilled than GP colleagues.

The categorisations demonstrate that the same features are appearing in different cases, even though they were originally being described differently. Lastly, other categories are emerging that are similar in conception which could be collectively described under a broader heading. I used a large sheet of paper to then consider creation of typologies within all the charted data.

I spent a considerable amount of time on considering typologies but then decided that for the purpose of this study, although typologies can be recognised as powerful analytical tools, they were not appropriate or required. Loftland et al (2004) advise that there is no point in devising arbitrary typologies as they are only worthwhile if they aid systematic understanding. Further, Hammersley and Atkinson (2007) argue that to be effective, a typology should give a good purchase on the data, and help explain differences rather than be a purely conceptual exercise. I felt that I was wasting time in searching for links between groupings of phenomena and creating a typology when immersion within and iterative checking of the data, in addition to application of the methodological framework of feminism was providing a framework for analysis from the descriptive accounts of the raw data.

3. Explanatory Accounts. Detecting Patterns; Associate Analysis and Identification of Clustering

This final stage found the links or connections between the phenomena in the form of linkages, or attachments to sub-groups. Matched linkages had already started to appear at this stage (such as GPs lack of understanding of spirometry and practice nurses appearing to be working in isolation) however they could not be verified until the full data set was reviewed. Notes were made on the emerging links or connections that were seen, with aspects of feminism as the underlying methodological principle underpinning the links and connections.

Following analysis of the thematic charts, a central chart was created. Described as an "analytical notebook" (Ritchie et al, 2003a, p. 250), the chart consisted of abstracted classifications developed in the descriptive and classificatory stage of analysis. The chart was large and consisted of abbreviated statements and summarised items. Using the example of the abstracted classifications in chart two, one part of the chart included:

- Role in spirometry assessment/interpretation and training
- Categorisations - role within team (that is single nurse providing respiratory service or working within a team of nurses), ability to control appointment times, colleague communication, insular working, voice within team, confidence and competence
- Summary of factors affecting ability to undertake quality spirometry in clinical practice
- Nature of factors affecting ability to undertake quality spirometry in clinical practice
- Outcome of any changes in clinical practice or desired changes to improve practice

This was helpful in visually detecting patterns and in piecing together different parts of data for a more summative review. The central chart was particularly useful in selecting key phenomena and issues from each subject chart and linking phenomena previously not considered although at this stage I did have emerging ideas on the areas on which I wanted to evaluate: the methodological framework of aspects of feminism making this stage clearer and more straightforward to evaluate.

I began the search for associations at the individual case level of each practice nurse and by reading across charted data for each individual case was able to determine different and similar linkages between phenomena. I started by writing the chart (again using coloured pens to help with clustering of data) but then then ended up cutting up different parts of the chart, labelling the cut up pieces of paper with removable coloured labels and moving phenomena around on detecting patterns of association or clustering.

The health care assistant role for example, was moved a few times. Originally labelled in the "other" category when indexing the data, it was initially associated with the emerging greater theme of power dynamics within the general practice team as illustration of power dynamics between GPs and practice nurses and practice nurses and HCAs. The HCA role was later moved to be included within the thematic chart of the gendered organisation as, on verifying the association of HCAs with other health care professionals by using numerical distribution, the phenomenon of HCA was more closely associated with the gendered organisation. This had not been considered, yet following verification, seemed logical.

Explanatory accounts with underlying explanatory concepts based on the feminist principles were then developed following after re reading through synthesised data, referring back to and re-reading original interview transcripts and generally thinking around the data. This again was a lengthy process. I had so much information and written work with charts, memorandums and stick on coloured pieces of papers, it was difficult to organise my thoughts. In the end, a common sense approach in searching for explanations was taken. I deliberately did not read the synthesised data for a few weeks, to have a complete break and to enable a return to the synthesised data with a fresh outlook. This worked well and I was able to relate my findings to comparing my study with the empirical data (Chapter 2) and develop explanations and final themes in accordance with the methodological framework of feminism.

I then summarised the data into four main themes. The themes and sub themes being presented in the data tables in in Chapter 5, section 5.3.3:

I. Confidence and competence with spirometry (with three sub themes)
II. Training undertaken and role in spirometry (with two subthemes)
III. Feeling disenfranchised (with two subthemes)
IV. Power dynamics and the gendered organisation (with two subthemes)