

Copyright is owned by the Author of the thesis. Permission is given for a copy to be downloaded by an individual for the purpose of research and private study only. The thesis may not be reproduced elsewhere without the permission of the Author.

What Factors Influence Primary Health Care Nurses
Implementation of Evidence in Clinical Practice:
A Descriptive Survey

A 60 point research report in partial fulfilment of the requirements for the
degree of Masters of Nursing

At Massey University
Albany
New Zealand

Patsy Prior
2008

ABSTRACT

Introduction:

The role of primary health care nurses is an explicit feature of the modernization agenda of the New Zealand health service. Increasing importance is being placed on service improvement through effective decision making and enhanced clinical performance. To contribute to the development of primary health care it is crucial that nurses have the skills to appropriately implement research based and other evidence in practice. Evidence-based practice is equated with effective, high quality care and avoidance of habitual practices and techniques.

Method:

This study involved 55 West Auckland primary health care nurses working in the general practice setting. The aim of the study was to describe nurses' perceptions of their use of evidence-based practice, attitudes toward evidence-based practice and perceptions of their knowledge/skills associated with evidence-based practice. An additional aim was to determine the effect of educational preparation on practice, attitudes and knowledge/skills toward evidence-based practice. A non-experimental descriptive survey design was selected for this study.

Results:

The results of this study demonstrated that nurse's attitudes toward evidence-based practice, knowledge and skills relevant to the implementation of evidence-based practice and the educational preparation of the nurses were important factors influencing the effective utilization and application of research results in practice.

Conclusion:

The implementation of educational interventions are identified as an integral aspect of implementing evidence-based practice and enhancing primary health care nurses' knowledge and skill relevant to implementing evidence in practice. Therefore the emphasis should be on creating and promoting a culture, in which primary health care nurses recognize the need for improving their care, seek the knowledge and skills to do so, and feel supported, encouraged and valued. Further research is needed to assess the contextual factors influencing the achievement of evidence-based practice by primary health care nurses. These factors need to be identified and addressed, both at local and national levels, if evidence-based practice is to become a reality.

Acknowledgements

This report is the result of one year's work and would not have been completed without the support of my colleagues, friends and family. It is these people I would like to acknowledge and thank.

I wish first to thank the participants, for without their support this research would not have been possible. Thanks also to Dr Stephen Neville, my supervisor, your patience, knowledge and expertise was greatly appreciated. I have particularly valued your honest feedback and encouragement.

To my partner who never let me give up, without your encouragement I would not have been able to complete this project. My sincere appreciation and thanks to my sister who has supported me throughout this long process. Thanks to my children for their tolerance and understanding of my need to finally complete this process.

Lastly, thanks to my employer Waitemata District Health Board for the assistance and financial contribution throughout the years of my study.

CONTENTS

Abstract	i
Acknowledgements	ii
Table of Contents	iii
List of Tables	vi
List of Figures	vii
Abbreviations	viii
CHAPTER ONE: INTRODUCTION	1
1.1 Background and Overview.....	2
1.2 Context and Study.....	6
1.3 The Aim of the study.....	6
1.4 Report Structure.....	7
1.5 Summary.....	8
CHAPTER TWO: LITERATURE REVIEW	9
2.1 Search Strategy.....	9
2.2 History of Evidence-Based Practice.....	10
2.3 Types of evidence used to inform Practice.....	10
2.4 Barriers to Implementing Evidence.....	12
2.5 Implementing Evidence-Based Practice.....	16
2.6 Context and Implementing Evidence.....	19
2.7 Use of Evidence in Primary Health Care.....	21
2.8 Health Information	23
2.9 Summary.....	26

CHAPTER THREE: RESEARCH DESIGN AND METHOD	27
3.1 Design.....	27
3.2 Participants.....	28
3.3 Consent Process.....	28
3.4 Data Collection.....	28
3.5 Measures.....	29
3.6 Ethical Considerations.....	30
3.7 Validity and Reliability.....	31
3.8 Summary.....	34
CHAPTER FOUR: RESULTS	35
4.1 Data Screening.....	35
4.2 Data Analysis.....	36
4.3 Sample Description.....	37
4.4 Relationships between Variables.....	42
4.5 Summary.....	48
CHAPTER FIVE: DISCUSSION	49
5.1 Demographics.....	49
5.2 Attitudes Toward Evidence-Based Practice.....	49
5.3 Level of Educational Preparation.....	50
5.4 Knowledge and Skills.....	51
5.5 Length of Time Practicing as a Registered Nurse...	51
5.6 Frequency of Reading Professional Journals.....	52
5.7 General Limitations.....	53
5.8 Implications for Primary Health Care Nursing.....	53
5.9 Recommendations.....	54

REFERENCES	57
APPENDICES	80
Appendix One: Information Sheet.....	80
Appendix Two: EBPQ.....	82
Appendix Three: Demographic Data Sheet.....	84
Appendix Four: Permission from Upton and Upton...	85
Appendix Five: Maori Consultation.....	86
Appendix Six: Ethical Approval.....	87

LIST OF TABLES

Table 1: Summary of Demographic Information.....	38
Table 2: Relationship between respondent characteristics and Knowledge/skills relevant to the implementation of EBP.....	42
Table 3: Relationship between respondent characteristics and Attitudes toward EBP.....	43
Table 4: Relationship between respondent characteristics and Practice of individual components of EBP.....	44
Table 5: Relationship between respondent characteristics and length of time practicing as a registered nurse.....	45
Table 6: Relationship between respondent characteristics and length of time practicing in primary health care.....	46
Table 7: Relationship between respondent characteristics and level of registration preparation.....	47

LIST OF FIGURES

Figure 1: Registration Level.....	39
Figure 2: Tertiary Qualification.....	40
Figure 3: Frequency of Reading Professional Journals.....	41

ABBREVIATIONS

BPS Best Practice Statements

CIAP Clinical Information Access Programme

DHBS District Health Boards

EBQ Clinical Effectiveness and Evidence-Based Practice Questionnaire

KMO Kaiser-Meyer-Olkin

NZPHD New Zealand Public Health and Disability Act

PARIHS Promoting Action on Research Implementation in Health Services

PHO Primary Health Care Organizations

SPSS Statistical Package for the Social Sciences

Chapter One: Introduction

A strong primary health care system is central to improving the health of New Zealanders and in particular, reducing inequalities in health. The government identifies primary health care nursing as being crucial to the implementation of the Primary Health Care Strategy. Internationally, the potential for nurses to improve health in primary health care settings is acknowledged (Halcomb, Patterson, & Davidson, 2006). Increasing importance is being placed on improving health outcomes through the use of evidence. Consequently, effective clinical decisions based on available evidence are necessary if primary health care nurses are to best meet the needs of client/patients (Mantzoukas, 2008). Furthermore, nurses are becoming more accountable for the care they provide (McKenna, Ashton, & Keeny, 2004) and policy, political and professional imperatives have made evidence-based practice a clinical prerequisite for clinical practice (Mantzoukas, 2008).

Evidence-based practice is equated with consistent high quality care, with effective decision making (Mantzoukas, 2008) and offers a mechanism for discarding ineffective practices and techniques (Dopson, Locoock, Gabbay, Ferlie, & Fitzgerald, 2003). Governments around the world are encouraging evidence-based practice; this has led to a variety of initiatives, including the introduction of centres for evidence-based practice, dedicated journals, protocols, policies, guidelines and websites. However, it is recognized that the process of implementing evidence into practice is complex and involves more than a single focus on the practice of individual nurses. Implementing change, using evidence in practice and improving the quality of client/patient care are difficult processes which do not follow logical and linear paths (Rycroft-Malone et al., 2004a). The data from this study measured primary health care nurses' perceptions of their use of evidence-based practice, attitudes toward evidence-based practice, their knowledge/skills to access and interpret evidence and the effect of educational preparation on practice, attitudes and knowledge/skills associated with evidence-based practice.

This chapter presents the background, outlines the research question and the aim associated with this study. The context of this study is then outlined. This is

followed by an overview of the five chapters included within the report and concludes with an overall summary.

1.1 Background and Overview

Evidence-based practice is promoted as an approach to improving the quality of client/patient care and service delivery in health care systems internationally (Stetler, Ritchie, Rycroft-Malone, Shultz, & Charns, 2007). The current emphasis in New Zealand is for a health service that is modern, dependable and offers a quality assured service. Kitson (2001) suggests that the strategies developed by health policy makers in Australia and New Zealand have been profoundly influenced by the global clinical effectiveness and evidence-based practice movement. The New Zealand government changed the health system and its structures to focus on getting results through understanding the factors that determine health and by influencing them positively. Emphasis is on population health, health promotion and preventative care. The Government's objectives are to strengthen the public health system, achieve the best health and disability support outcomes for New Zealanders as well as reducing disparities between population groups (Ministry of Health, 2000). The New Zealand Public Health and Disability Act 2000 (NZPHD Act) received Royal Assent on 14 December 2000, repealing and replacing the Health and Disability Services Act 1993. The Act provided for the establishment of 21 District Health Boards (DHBs) which formally came into being on 1 January 2001 (Ministry of Health, 2000). DHBs are required to take a population health focus for their geographically defined populations and are responsible for regular assessment of the health and disability service needs of its local population. The NZPHD Act places considerable emphasis on the need for DHBs to forge strong links with the communities they serve, and they have a statutory responsibility for reducing health inequalities (Ministry of Health, 2000). DHBs are required to build a culture that facilitates and encourages collaboration between stakeholders at a local level (Ministry of Health, 2001a).

The New Zealand Primary Health Care Strategy 2001 provides clear direction for the future development of primary health care within the new health system and is clear that no one profession or discipline on its own can provide primary health care

(Ministry of Health, 2001b). A distinction between primary health care and primary care is identified in the literature. Primary care comprises a level of care provided to an individual with a medical focus and is a reactive process to a health crisis rather than a proactive intervention for health. Primary care has been described as a relatively limited concept covering first contact medical services for maintenance care (Mason, Orr, Harrison, & Moore, 1999). Primary health care in contrast refers to the provision of a comprehensive range of health care services to promote health (McMurray, 1998), and encompasses services, support and facilitation by health professionals to promote the health of and foster the empowerment of, individuals, families, and communities (Courtney, 1996). Primary health care is an approach to health care that includes a range of services designed to keep people well, from promotion of health and screening for disease to assessment, diagnosis, treatment and rehabilitation and can be described as the World Health Organisations approach to addressing inequalities in health status between and within nations (Baum, Traynor, & Brice, 1992). Therefore providing evidence-based primary health care would reflect positively on the community's health (Al-Ansary & Khoja, 2002).

Primary Health Organizations (PHOs) are the local provider organizations implementing the Primary Health Care Strategy and were developed in New Zealand in 2001 to provide a comprehensive range of health services to their enrolled populations. PHOs are not for profit and funded by DHBs to work with enrolled populations and their communities and, are encouraged to take a community-development approach to find appropriate solutions for disadvantaged groups (Ministry of Health, 2001b). The establishment of primary health care organizations offers health care professionals, including nurses, the chance to develop local initiatives, to improve access and increase the range of services available in primary health care. What is envisioned in the Primary Health Care Strategy is that a range of health professionals working collaboratively to provide primary health care will reduce inequalities (Ministry of Health, 2001b). There is increasing opportunity for nurses to lead and direct health care services and clinical practice development (Davidson, Elliott, & Daly, 2006). In the New Zealand health sector, nurses play a pivotal role and the nursing profession is recognized as being at the forefront of health sector innovation and leadership (A. King, 2004). To contribute to the development of primary health care it is crucial that nurses have

the skills to read, review and appropriately implement research based evidence in practice. Nurse leaders in practice and education are instrumental in providing nurses with resources to competently and confidently apply research findings to clinical practice (Frasure, 2008).

International nursing organizations identify evidence-based practice as a primary strategy for creating integrated health models, and for developing the recognition of nurses as important providers of health care (Jutel, 2008). The Nursing Council of New Zealand places evidence-based knowledge, education and research in their competencies for registered nurses' scope of practice (Nursing Council of New Zealand, 2007). The Australian Nursing and Midwifery Council require nurses to practice within an evidence-based framework (Australian Nursing and Midwifery Council, 2007); and the Royal College of Nursing promotes evidence-based practice as part of its clinical governance (Royal College of Nursing, 2007). Authors such as Jutel (2008) suggest that evidence-based practice is fundamental to the advancement of the profession of nursing and to ensure standards of nursing. Nurses have to be able to continually evaluate the care they give and be accountable for providing the best possible care (Gennaro, Hodnett, & Kearney, 2001). Graduating nurses should have an understanding of the basic principles of research, research methods, and sources of information and have the ability to apply research evidence to practice. Not all nurses will contribute to the science of nursing by initiating research projects (Upton, 1999b), however, it is an expectation that nurses be able to evaluate research articles and engage in modifying practice appropriately (McCloskey, 2008).

Providing evidence-based primary health care has the potential to improve the health and well being of people and communities. McCleary and Brown (2003) promote evidence-based practice as a way to improve nursing practice and health outcomes, where research results have been applied to practice, a corresponding improvement in nursing care has been found (Holzemer & Tierney, 1996). French (2000) highlights improved physiological, psychosocial and behavioural outcomes for clients/patients who receive evidence-based nursing interventions. Evidence-based practice offers a mechanism for providing effective care and for discarding habitual practices and techniques (Dopson et al., 2003). The increasing

responsibility being taken on by nurses, and the growing prominence of the areas of practice, for example primary health care demand that practice is effective (Thomas & While, 2001). Therefore the need to use research findings effectively is a critical component of the primary health care nurses role (McKenna et al., 2004).

The current emphasis on service improvement through effective decision making and enhanced clinical practice has resulted in a climate in which research and development is a central feature (Fitzsimons, McCance, & Armstrong, 2006). Building research capacity has been highlighted internationally as a crucial element in the advancement of nursing research and has been defined in the literature as the ability to conduct research (McCance, Fitzsimons, Kenney, Hasson, & McKenna, 2007). Finch (2003) defines research capacity building as “enhancing the ability within a discipline or professional group to undertake high-quality research” (p.427). McKenna and Mason (1998) discuss research capacity in terms of becoming informed and critical consumers of research at one level and they suggest that it will only be a small percentage of individuals in any given profession who will actually carry out research.

However, building nursing research capacity is recognized as a significant challenge worldwide (Segrott, McIvor, & Green, 2006). Changing clinical practice is obviously not simple and straight forward and the common challenge is the implementation of change (Wallin, Bostrom, Wikbald, & Ewald, 2003). Similar cultural and organizational factors have been widely recognized as crucial for success in quality improvement and research utilization projects. The organizational culture in which nurses work has a major role to play in influencing the use of research findings in clinical practice (Chummun & Tiran, 2008). McCance et al. (2007) argue that the generation of knowledge is merely an academic endeavour unless successful approaches can be identified to integrate evidence into practice. To do this requires, strategic supportive leadership, supportive organizational culture, effective training, availability of databases and research reports (Wallin et al., 2003), and an attitude that research is essential to the practice of nursing (Stetler, 2003).

1.2 Context of the Study

The general practice setting is a focal point for primary health care in many health systems. In New Zealand, primary health care is delivered through many models from government funded organizations, non government organizations and private practice. Primary care practices or general practices may run as private businesses or organizations such as community trusts, accident and emergency services or as part of Maori community organizations providing health care. These services aim to provide primary, community-based, comprehensive and continuing client/patient-centred care to individuals, families/whanau and their community. The model of practice undertaken in the primary care setting is undergoing a cultural change moving from the focus on disease and episodic care and treatment of illness to a greater emphasis on keeping people well (Ministry of Health, 2001b).

As a registered nurse working in primary health care, I wanted to explore primary health care nurses' perceptions of their use of evidence-based practice, attitudes toward evidence-based practice, their knowledge/skills to access and interpret evidence and the effect of educational preparation on practice, attitudes and knowledge/skills towards evidence-based practice.

1.3 The Aim of the Study

The aim of this study was to describe primary health care nurses' perceptions, attitudes and knowledge/skills associated with evidence-based practice. The research questions used were based on those developed by Kohen and Lehman (2008).

Research Questions

- What are primary health care nurses' perceptions of their use of evidence-based practice?
- What are primary health care nurses' attitudes toward evidence-based practice?
- What are primary health care nurses' perceptions of their knowledge/skills associated with evidence-based practice?
- What is the effect of educational preparation on practice, attitudes and knowledge/skills associated with evidence-based practice?

1.4 Report Structure

There are a total of five chapters in this research report

Chapter One: Introduction and Background

This chapter introduces the use of evidence-based nursing practice in the primary health care setting. It provides an overview of the background to changing healthcare systems in response to health care restructuring coupled with increasing demands for effective care, quality services, and increased professional accountability. The context of the study is outlined. The aim and research questions are identified.

Chapter Two: Literature Review

The Literature review provides a detailed examination of published work relating to factors influencing the implementation of evidence into practice by the nursing profession. The review of the literature provides an international perspective on research utilization, one of the most widely studied aspects of evidence-based practice.

Chapter Three: Method

This chapter identifies the methodology and method utilized in the study. The ethical considerations for the study are addressed along with a description of the participants. A non-experimental descriptive design was selected for this study and Upton & Upton's Clinical Effectiveness and Evidence Based Practice Questionnaire (EBPQ) (2006) was identified as the most appropriate tool for measuring, the day-to-day application of evidence to practice, individual attitudes and relevant skills in this population group. The chapter concludes with a section on validity and reliability of the EBPQ used in this study.

Chapter Four: Results

Chapter Four presents the results of this study which were obtained using the EBPQ and the demographic information of the participants. This information is presented using tables, figures and text.

Chapter Five: Discussion and Conclusion

This chapter discusses the key findings of this study in relation to current literature surrounding the use of evidence by the nursing profession. There are a number of implications for primary health care nursing outlined and the methodological limitations of the study are identified. Areas for future research are also suggested.

1.5 Summary

Government policy encourages the use of best evidence for clinical practice. Factors that can impede or facilitate the use of research in practice need to be identified and addressed if evidence-based practice is to become a reality. As outlined, the aim of the study was to answer the research questions: What are primary health care nurses' perceptions of their use of evidence-based practice, attitudes toward evidence-based practice and their knowledge/skills associated with evidence-based practice? What is the effect of educational preparation on practice, attitudes and knowledge/skills towards evidence-based practice? The following chapter places the present study within the context of the available literature on the topic under investigation. It begins with a brief overview of the history of evidence-based practice and the types of evidence used to inform nursing practice, followed by an examination of the factors influencing the achievement of evidence-based practice by the nursing profession, the use of evidence in primary health care nursing is also discussed. The use of the Internet, protocols, and guidelines as tools for closing the gap between research and evidence-based practice are also presented.

Chapter Two: Literature Review

The previous chapter presented the context and background to the study. This chapter presents a comprehensive literature review critically exploring and examining primary health care nurses' attitudes and knowledge/skills associated with evidence based practice. A literature review is an important step in the research process as it determines what is already known about the subject and forms the basis for future research. Performing a literature review provides a background for understanding current knowledge on a topic and illuminates the significance of the new study (Polit & Beck, 2004).

This literature review commences with an outline of the search strategy. An overview of the history of evidence-based practice is presented and the types of evidence used to inform nursing practice are discussed. Factors influencing the implementation of evidence by the nursing profession including, barriers to achieving evidence-based practice, the knowledge and skills required by nurses to implement evidence-based care are examined. The role of organizations and nursing leadership in facilitating research use in practice are also discussed. Factors influencing the implementation of evidence in the primary health care setting are also examined. This chapter concludes with an overview of the use of the Internet, protocols and guidelines as tools for research evidence.

2.1 Search Strategy

A literature search was carried out using the terms 'primary health care', 'nursing', 'leadership', 'evidence-based practice', 'research utilization', 'context', 'facilitation', 'barriers', 'education', 'knowledge and attitudes', to search the Cumulative Index for Nursing and Allied Health, Web of Science, Ovid, Medline, Science Direct, and Google Scholar. Articles were obtained through the Internet and academic libraries. Literature was also obtained through cross-referencing articles and studies that appeared relevant. The search was restricted to the English language and no limitations were placed on types and dates of studies. Publications were also obtained through the Ministry of Health website.

2.2 History of Evidence-Based Practice

Evidence-based practice has evolved as the dominant theme of practice, policy, management and education within health services across the developed world (Rycroft-Malone et al., 2004a). The attraction of evidence-based practice for use by health professionals lies in its promise of being able to deliver consistent high quality care (Rolfe, Segrott, & Jordan, 2008). Rycroft-Malone (2006) identified that the term evidence-based medicine first emerged in the 1980^s when prior to this time health care decisions were largely based on observation and previous experience of clinical phenomena. The introduction of evidence-based medicine ensured that effective clinical decisions were based on sound scientific evidence. Research uses recognized procedures to arrive at certain conclusions and some of those procedures are designed to rule out or minimise the possibility of error (Paley, 2006). Identifying and eliminating error is the basis of scientific method (Haack, 2003), and research evidence is evidence that has passed this test (Paley, 2006). Sackett, Rosenberg, Gray, Haynes and Richardson (1996, p.71) define evidence-based medicine as "...the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients". Sackett, Strauss, Richardson, Rosenberg and Haynes (2000) suggests that evidence-based medicine is more than randomised controlled trials and that evidence is inclusive of clinicians' expertise and patients' preferences. This definition indicated the acceptance of a broader view of what constitutes evidence, including clinical and practitioner expertise (Rolfe, 1999).

2.3 Types of Evidence used to inform Practice

The debate about what constitutes evidence for evidence-based practice is not new (Dobrow, Goel, & Upshur, 2004; Kendall, 1997; Rycroft-Malone, 2004; Scott-Findlay & Pollock, 2004). Definitions provided of the term 'evidence-based practice' in relation to nursing show remarkable variation (Banning, 2005), and French (2000) identified fourteen definitions in the medical discourse. Evidence-based practice emerged from evidence-based medicine, and other phrases such as research-based practice and evidence-based nursing (P. French, 2000). Evidence-based nursing is more than research utilization. Research utilization, defined as the use of research findings to guide practice (Estabrooks, 1999a), is part of evidence-based practice; evidence-based practice being more broadly defined as the integration of research evidence and clinical

expertise in clinical decision making. Pravikoff, Tanner and Pierce (2005) define evidence-based practice as a systematic approach to problem solving and the use of best evidence to provide the best care. Gosling, Westbrook and Spencer (2004) in a study to investigate nurses' use of online evidence, used Sackett et al.'s (1996) definition of evidence-based medicine. French (2002, p. 250) describes evidence-based practice as "... a euphemism for information management, clinical judgement, professional practice development or managed care". Authors such as Newman, Papadopoulos and Sigsworth (1998), criticize the emphasis on randomized controlled trials as the most robust source of evidence, to the neglect of other research approaches. Nolan and Bradely (2008) argue there is an over reliance on randomised controlled trials, along with systematic reviews and meta-analyses, to determine the effectiveness of various treatments.

Fawcett, Watson, Neuman, Walker and Fitzpatrick (2001) caution against the restriction of the term evidence to mean research findings and argue for a more holistic approach in which different ways of knowing provide different lenses for critiquing and interpreting different kinds of evidence. There are sources of knowledge which are clearly different from research knowledge and which cannot be scientifically evaluated (Paley, 2006). "These alternatives come with a range of different labels, including aesthetic knowledge, embodied know-how, personal knowledge and intuitive knowledge" (Paley, 2006, p.83). In addition, clinical judgement (Estabrooks, 1999b), theories (Fawcett et al., 2001), tacit knowledge (P. French, 1999) and intuition (Jennings & Loan, 2001) have all been recognized as important sources of evidence for decision-making in nursing.

Increasing recognition is now being given to different sources of evidence (Kitson, 2002). Authors recognize the appropriateness of the randomized controlled trial for evidence of effectiveness, but that other forms of evidence also inform clinical decision making and the delivery of health care (Rycroft-Malone, 2008). There is increasing emphasis on nursing practice to be evidence-based (Gerrish, Ashworth, Lacey, Bailey, & Cooke, 2007), therefore the concept of evidence-based practice requires clarification if nurses are to apply it in their clinical decision-making to improve the delivery of care (Banning, 2005).

2.4 Barriers to Implementing Evidence

Research examining the implementation of evidence-based practice in nursing has focused primarily on the many difficulties experienced in trying to achieve evidence-based practice, in particular on the barriers that may impede research utilization (Stetler et al., 2007). The Barriers to Research Utilization Questionnaire developed in the USA by Funk, Champagne, Wise and Tornquist, (1991) which is underpinned by Rogers' (1983) Theory of Diffusion and Innovation has been used extensively over the past fifteen years in a number of countries including Australia (Hutchinson & Johnston, 2004; Retsas, 2000; Retsas & Nolan, 1999), Finland (Kuuppelomaki & Tuomi, 2005; Oranta, Routasalo, & Hupli, 2002), Ireland (Glacken & Chaney, 2004), Sweden (Kajermo, Nordstrom, Krusebrant, & Bjorvell, 1998), USA (Walsh, 1997), Canada (Estabrooks, 1999b) and the United Kingdom (Closs & Bryar, 2001; M. Nolan et al., 1998). This instrument has also been used to examine research utilization in specific groups of nurses, for example, community nurses (Bryar et al., 2003) and forensic mental health nurses (Carrion, Woods, & Norman, 2004). Factors identified that hinder the development of evidence-based nursing practice and research utilization include lack of time to read research findings (Bryar et al., 2003; Gerrish & Clayton, 2004; Nagy, Lumby, McKinley, & Macfarlane, 2001), inadequate time to interpret and implement research findings (Kajermo et al., 1998; Sitzia, 2001), difficulty with accessing and understanding research (McCaughan et al., 2002; Nagy et al., 2001), lack of skills needed to access, understand, evaluate and implement research findings (Retsas, 2000; Veeramah, 1995), lack of support from organizations (McCaughan et al., 2002), as well as lack of autonomy to change practice (Parahoo & McCaughan, 2001; Sitzia, 2001).

Several other questionnaires have been developed to examine research implementation. McKenna et al. (2004) developed a questionnaire to address the barriers to the use of evidence-based practice in primary health care. Gerrish et al. (2007) developed a self report tool to assess the factors that affect the development of evidence-based nursing practice, where in addition to research evidence, other forms of evidence were considered, including evidence from colleagues, personal experience, intuition and local policies. Upton and Upton (2006) developed a self report questionnaire to measure the variables considered important for the implementation of evidence-based practice inclusive of knowledge of, attitudes toward and practice of evidence-based nursing.

There are a limited number of qualitative studies addressing barriers to evidence-based nursing. In a focus group study to explore the barriers to implementing evidence-based practice among Flemish nurses, some of the barriers identified included a strong resistance to change practice, lack of the necessary knowledge and skills, and lack of access to information (Hannes et al., 2007). Some of the other barriers identified in qualitative studies were a strong hierarchical structure, difficulties in managing innovation and an inadequate system for personal and professional development (Newman et al., 1998), patients' preference as the driving force for nurses (Rycroft-Malone et al., 2004a), resistance to change and lack of motivation (Ring, Malcolm, Coull, Murphy-Black, & Watterson, 2005).

2.4.1 Attitudes /Attitudinal Barriers to Implementing Evidence

The literature reflects a growing interest in nurses' attitudes toward using and participating in research to change practice. Many nurses realize the importance of applying research findings to their practice and are keen to acquire the necessary skills and knowledge to help them read research reports to improve their practice (Parahoo, 2000). Frasure (2008) in a systematic review describing instruments used to measure nurses' attitudes toward research utilization identified the Research Utilization in Nursing Survey (Estabrooks, 1999a) as the instrument with the strongest psychometric properties for measuring nurses' attitudes toward using and participating in research. Studies have suggested that a positive attitude on the part of nursing staff to nursing research is important for the effective utilization and application of research results in nursing practice (Champion & Leach, 1986; Hicks, 1993; Lacey, 1994). One of the key factors influencing the use of evidence in clinical practice is the general attitudes of nursing staff and their workplaces toward research (Parahoo, 1998; Parahoo & McCaughan, 2001). In a systematic review by Estabrooks et al. (2003b) of six potential determinants of research utilization, only one had a positive association with research utilization, individual beliefs and attitudes. A survey of Canadian rehabilitation professionals found that research utilization was associated with positive attitudes toward research and with graduate education (Waine, Magill-Evans, & Pain, 1997). These findings indicate that improving attitudes toward research may be a method to increase nurses' research utilization (McCleary & Brown, 2003). Bonner and Sando (2008) conducted a study of Australian nurses using the Edmonton Research Orientation Survey; the findings of this study suggest that a positive attitude toward

research is associated with increased research utilization in clinical practice. The Edmonton Research Orientation Survey has also been used in studies with Canadian paediatric nurses (McCleary & Brown, 2003) and allied health professionals (Pain, Magill-Evans, Darrah, Hagler, & Warren, 2004).

Studies have found that Swedish (Berggren, 1996; Bjorkstrom & Hamrin, 2001; Wallin et al., 2003), English (Hicks, 1993, 1995; Lacey, 1994; McSherry, 1997; Upton, 1999a), Irish (Parahoo, 1998) and Australian nurses and midwives (Yates et al., 2002) take a positive attitude towards research. Another study provided by McSherry, Artley and Holloran (2006) using the Research Awareness Questionnaire indicated that research awareness and the use of evidence in practice was significantly promoted or inhibited by attitude, confidence and understanding, and support. Most questionnaires were self administered; nurses self reports of their attitudes toward and perceptions of their use of evidence-based practice may not necessarily be an accurate reflection of reality. This is supported by Upton and Upton (2005) who identify that participants may give answers to self report questions that they perceive the researcher wants to hear as opposed to what they really think. Despite, a number of studies having found that the majority of nurses expressed positive attitudes toward research they reported minimal use of research findings in practice (Bjorkstrom & Hamrin, 2001; Parahoo, 1998; Veeramah, 1995; Wright, Brown, & Sloman, 1996).

A link between developing positive attitudes toward research and the amount of research education received has been identified (Cole, 1995; Dyson, 1997; Hitchcock & Murphy, 1999; Pond & Bradshaw, 1996). It has been reported that attitudes are associated among other things with the age of the nurses, their level of education, knowledge about research methods and the organization in which they are employed (Berggren, 1996; Bjorkstrom & Hamrin, 2001; Hicks, 1995; Lacey, 1994). Veeramah (2004) suggests that research education and attitudes toward research are two of the main factors that may be related to the utilization of research findings in practice. Therefore, education is necessary to change attitudes toward research and to prepare nurses adequately to utilize research in practice settings (McCleary & Brown, 2003).

2.4 2 Educational Barriers to Implementing Evidence

The successful implementation of evidence-based practice relies on the sound educational preparation of nurses. Educational programmes are needed that enable nurses to actively participate in research (McCance et al., 2007). The challenge for nursing is to equip practitioners with the skills to read, critically review and appropriately implement research-based and other evidence for practice. One of the pivots of evidence-based practice is the ability of nurses to access and accurately interpret research derived evidence (Sherriff, Wallis, & Chaboyer, 2007). Rodgers (2000b) investigated the influence of education on research utilization and concluded that an association could be found between having a higher level of education and research utilization. Koehn and Lehman's (2008) study of registered nurses working in a medical centre in the USA using the Clinical Effectiveness and Evidence Based Practice Questionnaire reported a positive association between attitudes toward evidence-based practice and educational preparation level. Olade (2004) explored rural nurses' utilization of evidence-based practice guidelines from scientific research in their practice. From this she identified nurses with bachelor's degrees made up a large proportion of those involved in research utilization activities. Percy (1995) found that nurses who attended research courses had a more positive attitude towards research and felt that they were better able to use research to improve care. Sherriff et al. (2007) identified education as a means to generate positive attitudes toward and perceptions of knowledge and skills relevant to the implementation of evidence-base practice. The literature suggests that education in different aspects of research increases nurses' own research activity, encourages nurses to search for research results and promotes the utilization of research knowledge in clinical practice (Kuuppelomaki & Tuomi, 2005; Michel & Sneed, 1995; Rodgers, 2000b). However, McCleary and Brown (2003) argue that interpretation of the results of surveys designed to measure the associations between education about research and self-report research utilization is challenging. "Nurses' education about research has been confounded with level of education, and because of the wide variability in research curricula present in undergraduate and graduate nursing education" (McCleary & Brown, 2003, p.23).

Mitchell (2006) suggests there is growing evidence of innovative academic-practice partnerships that are making evidence-based practice a part of every day clinical practice, and of nursing curricula at all levels. There is strong evidence to suggest that

evidence-based practice is part of educational and practice norms in countries that have a strong history of nursing research and nursing education within higher education (Burke et al., 2005; Henderson, Winch, Hennney, McCoy, & Grugan, 2005). In New Zealand, an education sector policy change established the Performance Based Research Fund through which tertiary organizations are progressively funded on the basis of their research performance. Programmes of research provide nurses with significant opportunities to ask crucial questions about the nature of nursing and its role in facilitating health improvement (Gage & Hornblow, 2007). Nonetheless, there are still numerous barriers to realizing the full potential of research in the science and practice of nursing (Mitchell, 2006).

Although education about research and the implementation of research findings in clinical practice is available to nurses, many still report finding research incomprehensible (Veeramah, 2004), and are not equipped with the skills to make use of research findings in practice (Blanchard, 1996; Meah, Luker, & Cullum, 1996). There continue to be surveys that claim that many practicing nurses are unaware of the concept of evidence-based practice; do not feel skilled in finding or evaluating evidence; or do not understand how to practice from an evidence base (Egerod & Hansen, 2005; Pravikoff et al., 2005). Educational programmes need to be evaluated to demonstrate their effectiveness as an intervention designed to change attitudes, and perceptions of knowledge and skills related to evidence-based practice (Sherriff et al., 2007) and to ensure that nurses are being provided with the necessary skills to enable them to use research findings effectively in clinical practice (Veeramah, 2004).

2.5 Implementing Evidence-Based Practice

The past two decades have seen evidence-based practice become increasingly popular in health care environments (P. Nolan & Bradley, 2008). Mantzoukas (2008) asserts that evidence-based practice equates to effective clinical performance, at the same time discouraging the utilization of ineffective practices that are grounded in traditional behaviours such as habitual practices. Various governments have introduced initiatives to support the development of evidence-based healthcare systems in which decisions made by healthcare practitioners, managers, policy makers and clients/patients are based on high quality evidence (Gerrish et al., 2007). Activity has focused on developing

evidence-based guidelines for clinical interventions. For example, in the United Kingdom the National Institute for Clinical Excellence has been established, in Scotland the Intercollegiate guidelines network, in the United States, the Agency for Health Care Research and Quality, in Australia The National Institute for Clinical Studies and in New Zealand initiatives such as the Effective Practice Initiative centre at Auckland University were established. The Joanna Briggs Institute and the Cochrane Collaboration provide resources that support evidence-based nursing. There are also numerous journals that support evidence-based nursing, for example *Worldviews on Evidence-Based Nursing* and *Journal of Advanced Nursing*.

As nurses have increasingly acquired active participation in decision making in practice the need for evidence-based decisions that would lead to improved clinical practice is considered crucial (Mantzoukas, 2008). Research produces important healthcare knowledge; however, Burns and Groves (2004), Chummun and Tiran (2008) argue that the use of this knowledge is not reflected in the care that clients/patients receive and many practice areas still do not reflect the best available evidence (Bondas, 2006). A study by Pravikoff et al. (2005) about 'the readiness of US nurses for evidence-based practice' reports that many nurses are not ready to utilize the evidence from research findings in their clinical practice. A New Zealand study by Bond (2007) involving nurses working in acute hospital settings identified that accessing evidence-based information was not afforded high priority. There is still a dearth of evidence that demonstrates research evidence is a driver for change in clinical practice (Olade, 2003) and studies claim that the gap between research and practice seems to be most obvious in the nursing profession (Bero et al., 1998; Bostrom & Wise, 1994; Funk, Tornquist, & Champagne, 1995; Olade, 2003; Retsas & Nolan, 1999). Authors have emphasized the need for closing the gap between research and practice (Bistro & Sutra, 1993; Dufault & Sullivan, 2000). Rycroft-Malone (2008) suggests that these findings reflect the legacy of an historic lack of recognition of the complexities involved in implementing evidence-based practice.

Factors influencing the achievement of evidence-based practice by the nursing profession need to be identified and addressed if evidence-based practice is to become a reality. Consideration needs to be given to a range of factors including barriers to achieving evidence-based practice, the knowledge and skills required by nurses to

implement evidence-based care, different types of evidence used to inform practice, organizational and contextual factors and research capacity (Gerrish et al., 2007; Harvey et al., 2002; Kitson, Harvey, & McCormack, 1998a; McCormack et al., 2002; Rycroft-Malone et al., 2004a; Rycroft-Malone et al., 2002). Cullum and Sheldon (1996) and Estabrooks (2003) argue there is need for the gap in translating research findings into clinical practice to be strategically addressed and that this cannot be achieved through a single focus on the practice of individual practitioners.

Nurses report a lack of autonomy as a key factor limiting their ability to change practice (Gerrish, Ashworth, Lacey, & Bailey, 2008). Lack of organizational supports, lack of time, and mentorship for practicing nurses to learn and use evidence-based practices remain substantial barriers (Fink, Thompson, & Bonnes, 2005). In a systematic review of the literature Meigers et al. (2006) identified access to resources, organizational support and provision of education were important factors associated with research utilization. Generally, there is agreement that the use of research findings in clinical practice requires both organizational and educational support. The successful implementation of evidence-based practice relies on sound educational preparation of nurses, the ability to access research findings and appropriate organizational structures for teams to change practice (Rycroft-Malone, 2004). Although it is recognized that all nurses have a professional responsibility to base their care on the best available evidence, implementing evidence-based practice in healthcare settings is a complex undertaking.

2.5 1 Implementation Models

Traditionally inquiry into the use of research findings in nursing practice has focused on the characteristics' of individual nurses (Meigers et al., 2006). Less attention has been paid to the context and role of organizations in facilitating research use in practice (Estabrooks, 2003; Estabrooks, Floyd, Scott-Findlay, Leary, & Gushta, 2003b; Rycroft-Malone et al., 2004a). Kitson, Harvey and McCormack (1998b) proposed the Promoting Action on Research Implementation in Health Services (PARIHS) conceptual framework. The PARIHS framework attempts to make sense of the factors involved in implementing evidence-based practice as acknowledged by many authors (Dawson, 1997; Ferlie, Wood, & Fitzgerald, 1999). The implementation of research findings in clinical practice is explained as a function of the relationship between evidence

(research, clinical experience, client/patient preference), context (culture and leadership), and facilitation (characteristics, role and style). When evidence is scientifically strong and matches professional consensus and client/patient needs, the context is open to change with strong leadership and where facilitation of change is appropriate the implementation of research findings is expected to improve (Harvey et al., 2002; Rycroft-Malone et al., 2002). The PARIHS framework represents the complexity of the factors involved in implementing evidence-based practice in the clinical setting (Rycroft-Malone et al., 2004a).

In an effort to overcome the barriers to utilization of research evidence in clinical practice, Winch, Henderson and Creedy (2005) developed The Read, Think, Do! Model. This is a problem-solving approach to implementing research findings and practice development. Mantzoukas (2008) identified several steps involved in implementing evidence into practice: formulating a research question from areas of clinical uncertainty, searching and critically appraising the appropriate literature, integrating the findings into practice; and evaluating the intervention. Gerrish and Clayton (2004) highlighted support from managers, facilitation strategies and culture as key elements necessary to the implementation of research findings in practice.

2.6 Context and Implementing Evidence

2.6 1 Culture

Many researchers claim organizational factors such as culture and leadership are important factors in predicting and supporting the use of research findings in clinical practice (Parahoo, 2000; Rizzuto, Bostrom, Suter, & Chenitz, 1994). Certain cultures are more conducive to the promotion and use of evidence-based practice (Marchionni & Ritchie, 2008), in particular, cultures in which learning at the organizational level is promoted have been linked to successful implementation of quality improvement endeavours (Nutley & Davies, 2001). Furthermore, the need to view research utilization as an organizational process, rather than as an activity that can be undertaken by individual nurses, has been proposed repeatedly (Closs & Cheater, 1994; Nagy et al., 2001; Newman et al., 1998; Stetler et al., 1998). Some of the non supportive factors identified include deficient leadership, workload and lack of protected time, scarcity of expertise in methods and project management, hierarchy and organizational problems

and inadequate multidisciplinary collaboration (Johnstone, Crombie, Davies, Alder, & Millard, 2000; Nagy et al., 2001; Retsas, 2000). The work environment is often very busy and stressful and therefore nurses do not always have time identified specifically for research activities (Oermann, Floyd, Galvin, & Roop, 2006). Parahoo's (2000) study of hospital based nurses in Northern Ireland identified insufficient time, poor staffing levels and poor skill mix as obstacles which impede research utilization. Clearly, before significant and durable change in practice can occur, the culture of the healthcare context must be understood (McCormack et al., 2002; Rycroft-Malone et al., 2004a). Understanding which contextual factors enhance nursing research utilization may support organizations in creating environments that facilitate the uptake of evidence in nursing practice (Meijers et al., 2006).

2.6 2 Nursing Leadership/Clinical Nurse Specialists

The literature identifies nurse leaders as crucial to the implementation of evidence into practice and highlights the increasing opportunity for nurses to direct health care services and clinical practice development (Davidson et al., 2006). Within the New Zealand primary health care setting, nursing leadership is acclaimed as a major factor influencing clinical decision-making and improving quality of care. As reported earlier, King (2004) identified the nursing profession as playing a pivotal role in health sector innovation and leadership. A number of studies reveal that nursing leadership influences the quality of client/patient care (Cook & Leathard, 2004; Filkins, 2003), and nursing leadership is important to ensure motivated and enthusiastic clinicians (Davidson et al., 2006). Wallin et al.'s (2003) study of Swedish nurses' identified supportive nursing leadership as a necessary prerequisite for the establishment of evidence-based practice. Nurse leaders undertake research; provide education and training for more junior staff and students (May, 2005) and promote a clinical environment conducive to change and innovation (McCormack et al., 2002). Wong and Cummings (2007) in a systematic review of the relationship between nursing leadership and patient outcomes identified the development of transformational nursing leadership as an important organizational strategy to improve client/patient outcomes.

Clinical nurse specialists are recognized internationally as expert practitioners who could facilitate the implementation of evidence-based practice (Austin, Luker, & Martin, 2006). French (2005) describes UK clinical nurse specialists as 'knowledge

brokers' and research by Thompson et al. (2001) has demonstrated the important role that many senior clinical nurses play in the dissemination of knowledge and research evidence to other nurses. Nurses' frequently seek information from colleagues to answer their clinical questions (Nagy et al., 2001). DeBourg (2001) suggests that "Advanced practice nurses are ideally prepared and positioned ...to serve as catalysts for optimizing patient care through evidence-based practice" (p.491). Findings from the literature indicate that nurses appreciate the role of clinical nurse specialists play in the dissemination of new knowledge (Dowling, 2000; Haste & MacDonald, 1992). Nurse leaders need to become proactive in mentoring so as to provide other nurses with the information and skills necessary to become involved in research utilization (McCloskey, 2008).

However, Davidson et al. (2006) highlights that significant barriers continue to exist for nurse leaders to participate in decision-making processes and senior clinical nurses are constrained by the same information access barriers facing other nurses. Factors cited include lack of easy access to research findings, lack of evidence relevant to nursing, and limited critical appraisal skills (Thompson et al., 2001). Further factors identified in the rural setting were 'no time' and 'no budget for research' (Olade, 2004). Austin et al.'s (2006) study of clinical nurse specialists in a community setting, reported that clinical nurse specialists did not have the 'authority' to bring about change in practice. Some authors identify that nurses in leadership roles may lack adequate preparation and organizational support (Kitson, Ahmed, Harvey, Seers, & Thompson, 1996; McCormack, Manley, Kitson, Titchen, & Harvey, 1999). Therefore organizations need to recognize the potential of nursing leadership roles (Borbasi, 1999; Bryant-Lukosius, DiCenso, Browne, & Pinelli, 2004) and develop a framework which enables clinical nurse specialists to develop their skill level and to use their expertise to facilitate the implementation of evidence-based practice (Austin et al., 2006).

2.7 Use of Evidence in Primary Health Care

There is a dearth of research examining the use of evidence-based practice by primary health care nurses. Most studies within primary health care have examined the views and attitudes of general practitioners (GPs) to evidence-based practice (Al-Ansary & Khoja, 2002; Mayer & Piterman, 1999; McColl, Smith, White, & Field, 1998; Young &

Ward, 2001). Studies claim that GPs report mainly positive attitudes towards evidence-based practice (Mayer & Piterman, 1999; McColl et al., 1998), although barriers such as lack of time (Al-Ansary & Khoja, 2002; McColl et al., 1998; Young & Ward, 2001), and understanding of terminology (Young, Glasziou, & Ward, 2002), are some of the factors identified that impede the use of research findings in practice. Much less is known about the views and attitudes of other professional groups toward evidence-based practice (O'Donnell, 2004), although those that do exist present a picture similar to that reported in the medical profession (Upton & Upton, 2006). McCaughan et al. (2002) claim lack of research and interpretation skills hinder nurse's implementation of evidence in primary health care practice. McKenna et al. (2004) identified conflicting results, overwhelming amounts of information and transferability of information into practice as barriers to the implementation of research findings into clinical practice within primary health care settings. Lack of confidence in statistical and numerical issues were reported in a study looking at the experiences of GPs and practice nurses undertaking evidence-based practice training courses (Greenhalgh & Douglas, 1999). The authors noted that these two groups assigned different meanings to the term research evidence; GPs thinking in terms of clinical trials; nurses having a more holistic view of evidence, including qualitative research and local findings (O'Donnell, 2004). McKenna et al.'s (2004) study reported that GPs ranked barriers differently to community nurses. GPs identified that the most significant barriers to using evidence in practice were the limited relevance of research to practice, keeping up with all current changes in primary health care, and the ability to search for evidence-based information. In contrast, the most significant barriers identified by community nurses were inadequate computer facilities, and difficulties influencing changes within primary health care (McKenna et al., 2004).

It is clear that few health care professionals within primary health care have the time to appraise the research evidence themselves (O'Donnell, 2004). The mere existence of evidence is not sufficient (Swinglehurst, 2005), there is also the question of how to fit a review of the evidence into an already over-stretched clinical day, where a variety of problems may be encountered. The utilization of research findings depends on time being made available for the reading and evaluation of research (Goode, Lovette, Hayes, & Butcher, 1987). The fact that time is said to be a major barrier to research utilization (Kajermo, Nordstrom, Krusebrant, & Bjorvell, 2000; Rodgers, 2000a), ways

must be found to ensure that evidence is delivered to nurses in an accessible format, which allows them to understand the findings. Clinical decision support systems that provide nurses with practice information automatically in response to client/patient specific assessment information are suggested as a solution for increasing translation of evidence into practice. Disseminating research in journals that are geared to nurses is one way to increase nurses' awareness of research findings that might be relevant to their practice (Oermann et al., 2008).

2.8 Health Information

2.8 1 Internet

The Internet is an important communication tool for healthcare professionals enabling access to professional educational programmes, journals and other information. The Internet provides an opportunity for all nurses to have access to a wide range of evidence (Estabrooks, Leary, Ricker, & Humphrey, 2003a; Royle, Blythe, DiCenso, Baumann, & Fitzgerald, 1997). However, regularly accessing information that is current and reliable continues to be a challenge for nurses and some authors suggest that nurses lag behind other groups in workplace use of the Internet (Jadad et al., 2001; Timmons & Tredoux, 2000). Researchers have noted that nurses as a group are slower than other healthcare professionals to use online health information (Estabrooks et al., 2003a; Gosling et al., 2004; Janes et al., 2004). Bond (2007) conducted a study of nurses working in acute hospitals in New Zealand. Her findings suggest that accessing evidence-based information is not afforded a high priority. Another New Zealand study of rural primary health care nurses noted that their use of Internet health information sources was very limited, with few nurses using the Internet for health information (Janes et al., 2004). A wide range of skills are required to access health information available on the Internet and transform it into knowledge that can be applied to personal health circumstances (Gilmour, Scott, & Huntington, 2008). Expertise involved in navigating the Internet has often been self-taught (Dumas, Dietz, & Connolly, 2001). A study by Lakeman (1998) reported that nurses felt ill-equipped to conduct effective data searching on the Internet, while another study cited lack of time, lack of confidence, and nurses' attitudes as barriers to accessing the Internet in the practice setting (Royle et al., 2000). McKnight (2006) reported nurses feeling that seeking and analyzing information from the Internet or other traditional information

resources could be ethically wrong, taking time and focus away from client/patient care. Liu, Pothiban and Khamphonsiri (2000) investigated the relationship between nurses' attitudes, skills and knowledge in relation to the use of computers in accessing health information. Positive attitudes and appropriate skills and knowledge were identified with increased use of online health information.

Common environmental barriers to online information utilization are the absence or limited numbers of computers, limited access to the Internet and Intranet in clinical areas and computers that are old and slow and not connected to printers (Tan et al., 2006). Nurses and other professionals are encouraged to improve their literacy in the field of information technology to keep pace with client/patients, who are increasingly accessing the Internet in search of health-related information (Jadad, 1999). In 1997, the New South Wales health Department implemented the Clinical Information Access Program (CIAP), an online evidence website which encourages nurses and other health professionals to use evidence in their practice (Gosling et al., 2004). Clinical support systems to facilitate timely access to information could be important to increase the utilization of evidence-based practice in demanding work environments (Doran & Sidani, 2007; Estabrooks, 2003).

The growth of online health information seeking by clients/patients to find information relating to their own particular needs has been linked to the development of a more participative and consumer-orientated model of healthcare (Kalichman, Bentosch, Weinhardt, Austin, & Luke, 2002). The Internet as a resource has the potential to change the way in which people become informed about and manage their health and illness (A. Rogers & Mead, 2004). Some have viewed the increase of lay use of the internet for health in celebratory terms (Hardey, 2001; Loader, Muncer, Burrows, Pleace, & Nettleton, 2002) because of the supposed potential that the technology has for changing power relations between clients/patients and health professionals (Nettleton, Burrows, & Malley, 2005). Some authors draw attention to opportunities of empowerment (Diamond, Wenzel, & Nissan, 2006; Donte, Corser, Kreulen, & Teitelman, 2004), and the fostering of client/patient expertise (Light, 2001).

There is evidence of quality issues with some Internet health information sites (Schmidt & Ernest, 2004), and a number of studies have raised concerns about Internet sites that

provide health-care information before it has been scrutinized by the experts (Bower, 1996; Dyer & Thompson, 2001; Jadad & Gagliardi, 1998; Risk & Petersen, 2002). These studies claim that clients/patients have insufficient expertise and so are unable to assess the quality and reliability of Internet-based information, that much of the information available on the Internet is unregulated and unrated, and that it is the responsibility of the consumer to determine the accuracy and relevance of the information (Hirji, 2004). Therefore nurses need to be informed of the treatment choices available to the public through the Internet, and accept or refute client/patient treatment choices on the basis of scientific evidence (Chummun & Tiran, 2008).

2.8 2 Clinical Guidelines and Protocols

The emphasis on evidence-based nursing, as well as standardization of nursing practice, has resulted in the production of clinical guidelines and protocols. Clinical practice guidelines and protocols have been identified as potential tools for closing the gap between research and evidence-based practice (Ploeg, Davies, Edwards, Gifford, & Miller, 2007), and reflect a move toward evidence-based practice which stems from concerns about variations in practice (Harrison, 1998). In Scotland the evidence-based practice movement has developed Best Practice Statements (BPS) to promote implementation of research into practice. A study by Ring, Coull, Howie, Murphy-Black and Watterson (2006) reported that a quarter of the nurses who responded to their survey were using the BPSs. However, Wadell (2002) suggests that despite intensive dissemination efforts, many guidelines were not fully implemented in practice or if they were resulted in only limited changes in the practitioner's behaviour (Grimshaw, Eccles, & Tetroe, 2004). Thirty to forty percent of clients/patients in the USA, the Netherlands, United Kingdom, Canada and Australia still do not receive treatment of proven effectiveness (Grol, 2001; Schuster, McGlynn, & Brook, 1998). Identified barriers to the use of guidelines and protocols are similar to factors known to hinder evidence-based practice such as lack of time and training, lack of equipment and staff resistance to change (Ploeg et al., 2007). Jordan and Segrott (2008) claim guidelines and protocols may be seen as detracting from the autonomy of nurses and that clinical decision-making is being directed or controlled (Rycroft-Malone, 2006). Factors identified that promote the use of guidelines and protocols include time and resources, change champions, specialist nurses, local leaders and in-service training (Ring et al., 2005).

2.9 Summary

The purpose of the literature review was to critically examine the existing literature relating to the use of evidence-based practice by health professionals within a primary health care context. There remains a great deal of debate surrounding the definition of evidence-based practice and types of evidence used to inform practice. Research examining the implementation of evidence-based practice in nursing has focused primarily on the barriers that may impede research utilization. The literature identified that a positive attitude on the part of nurses to nursing research is important for the effective utilization of research results in clinical practice. The evidence available suggested that education in different aspect of research increases nurses' own research activity, encourages nurses to search for research results and promotes the utilization of research knowledge in practice. Evidence is only part of the formula that leads to a positive change in nursing practice and a substantial body of knowledge exists that highlights the importance of the relationship between evidence, context and organizational factors in developing effective change strategies to improve practice. Organizational factors such as culture and leadership are important factors in supporting the use of research findings in clinical practice. Nursing leadership is crucial to the implementation of evidence into practice and improving the quality of client/patient care. It appears that in New Zealand very little is known about primary health care nurse's attitudes toward evidence-based practice.

This review highlighted the need for further research to be conducted which continues to examine the factors influencing the implementation of evidence into practice by nurses working in primary health care, the extent of their skills to access and interpret evidence and the additional support necessary to incorporate evidence-based nursing into everyday practice. The following chapter will present a detailed examination of the non-experimental descriptive study design which was used in the methodological approach for this study.

Chapter Three: Research Design and Method

This study, using a quantitative survey design, sought to describe a sample of primary health care nurses' perceptions, attitudes and knowledge/skills associated with evidence based practice. A literature review highlighted the need for further research to be conducted which continues to examine the factors influencing the achievement of evidence-based practice by nurses working in primary health care.

This chapter is structured as described by (Polit & Hungler, 1997). As such, it will provide an outline of the research design, method of data collection and ethical considerations of the study. An explanation of the instrument used to measure the variables considered important for the implementation of evidence-based practice will also be presented.

3.1 Design

Research is a rigorous, systematic investigation and its purpose is to validate existing knowledge and to generate new knowledge (Minichiello, Sullivan, Greenwood, & Axford, 2004). A quantitative non-experimental descriptive survey design was selected for this study. Descriptive research using quantitative methodology often refers to the gathering of information to describe populations (Brink & Wood, 1983), and can assist in the discovery of new meaning and provide new knowledge when there is very little known about a topic of interest (Dempsey & Dempsey, 2000). Survey research is one type of descriptive research. This type of research uses questionnaires or interviews to gather information about specific aspects of subjects' behaviour. Self administered questionnaires are useful for questions such as how often and how many (Nardi, 2003), and the data gathered can be used to describe, compare or explain attitudes of a population. In this study the instrument used was a self-report measure of perceptions, attitudes and knowledge/skills associated with evidence-based practice.

3.2 Participants

Participants were obtained via a purposive sample drawn from approximately 110 primary health care nurses working in general practices in West Auckland. Primary health care nurses working in the general practice setting were selected based on their ability to provide the desired information. Purposive sampling is a type of nonprobability sampling in which subjects are selected because they are identified as knowledgeable regarding the subject under investigation (Dempsey & Dempsey, 2000).

3.3 Consent Process

All participants were provided with a written information sheet (Appendix 1) that outlined the purpose and procedure of the study, including contact details of the principal researcher and supervisor for any additional queries. The rights of all participants and the benefits and risks of participating in the study were explicitly stated. In the information sheet it was stated that completion and return of the questionnaire was taken as consent.

3.4 Data Collection

The questionnaire packs comprised of an information sheet (Appendix 1), the Clinical Effectiveness and Evidence-Based Practice Questionnaire (EBPQ) (Appendix 2), the demographic data sheet (Appendix 3) and a postage paid return envelope. These were distributed to the population of primary health care nurses working in the general practice setting in West Auckland, between the 11th October 2007 and the 16th October 2007. The packs were distributed to potential participants by practice managers and public health nurses. During the week commencing the 30th October 2007 practice managers and public health nurses were asked to thank the nurses who had returned the questionnaires and to offer questionnaire packs to nurses who may not have had the opportunity to participate in the research. The final date for return of questionnaires was the 20th November 2007. One hundred and ten questionnaire packs were distributed. Fifty five questionnaires were returned in the free post envelopes provided to the researcher.

3.5 Measures

3.5.1 Clinical Effectiveness and Evidence Based Practice Questionnaire

The questionnaire used was a self-report measure of nurses' perceptions of their practice, attitudes and knowledge/skills of evidence-based practice, and was based on that of Upton and Upton (2006) (Appendix 2). Permission was granted from the author to employ the instrument (see Appendix 4). For the purpose of this study, the definition of evidence-based practice was taken to be the conscientious, explicit and judicious use of current best evidence in making decisions about the care of clients/patients (Upton & Upton, 2006). The questionnaire comprised of 24 items organized into three distinct subscales (1) Evidence-based practice, (2) Attitudes toward evidence-based practice, (3) Knowledge of evidence-based practice. The questionnaire sought to explore the following areas of interest.

(1) Practice of individual components of evidence-based practice

Individual respondents were asked to rate the frequency of completing certain component key steps to evidence-based practice, as identified by Sackett et al. (1997). For example, how frequently (from never to frequently) in the past year had the individual in response to a gap in their knowledge 'formulated a clearly answerable question as the beginning of the process towards filling this gap' or 'tracked down the relevant evidence once you have formulated the question'.

(2) Attitudes toward evidence-based practice

The questionnaire contained a number of statements designed to assess the respondent's attitudes toward evidence-based practice, which included perceived barriers such as workload, as well as personal judgments as to the value of evidence-based practice. A set of semantic differentials required the individual to indicate at which end of the spectrum of two opposing statements (e.g. 'Evidence-based practice is a waste of time' to 'Evidence-based practice is fundamental to professional practice') they would place themselves. This was rated on a seven- point scale, with the higher score indicative of a more positive attitude.

(3) Knowledge and skills relevant to the implementation of evidence-based practice.

This section dealt with perceived knowledge of the individual component skills of evidence-based practice (e.g. research and information technology (IT) skills, awareness of major information types and sources, ability to analyse critically evidence against set standards, dissemination of new ideas about care to colleagues, the ability to review own practice) with the individual respondent rating their own ability from one (poor) to seven (the best).

3.5 2 Demographic Information

A demographic data sheet (Appendix 3) was developed by the researcher based on the Nursing Council of New Zealand demographic data sheet. Following consultation with the Waitemata DHB Maori Research Advisor, changes were made to the demographic data sheet to give the study the capacity to acknowledge that cultural backgrounds may also influence participant's opinions and practices (Appendix 5). The demographic attributes measured were the individual's age, gender, first professional qualification, highest professional qualification, number of years practicing as a registered nurse, length of time working in primary health care, average number of hours worked in a two week period. Furthermore, participants were asked how frequently they read nursing journals that publish research articles. The reading frequency of nursing journals and published research articles was assessed by means of five categories: at least once a week, at least once a month, at least every three months, less than every three months and never at all. A dialogue box to allow participants to add any comments was also provided.

3.6 Ethical Considerations

An application was made to the Northern X Regional Ethics Committee for an Expedited Review of Observational Studies. Ethical approval was obtained from the Northern X Regional Ethics Committee on 4 September 2007 (Appendix 6). Massey University Human Ethics Committee was notified about the research. General approval was also provided by the Waitemata DHB Knowledge Centre.

Anonymity was assured to each participant and enforced with the provision of a pre-addressed free post envelope for the return of the questionnaire. Privacy and confidentiality was maintained throughout the project. All data collected from the study was stored in a locked cupboard and a password protected computer for the duration of the research. Following completion of the study, the data is to be stored in locked cupboard at Massey University for up to 5 years, following which it will be destroyed by the supervisor or nominated and appropriate person (as identified by the University). Access to the data was only available to the principle investigator and supervisor.

This was a non-experimental study. All potential participants were informed that they were under no obligation to participate in the study. It was not anticipated that there would be any risks to the participants or researcher during the proposed research. No conflict of interest was identified and there was no financial incentive for either the participants or the researcher during the study.

Whilst the research was not specifically aimed toward Maori it was anticipated that some participants may be Maori. The aim of this research study was to be consistent with the three main principles of the Treaty of Waitangi; partnership, participation and protection. Consultation with the Maori Research Advisor for Waitemata DHB involved discussing the study proposal; changes to the research format were made as advised. A process for liaison and feedback throughout the study was formulated and undertaken.

3.7 Validity and Reliability

Research is a rigorous, systematic investigation and its purpose is to validate existing knowledge and to generate new knowledge (Minichiello et al., 2004). In designing quantitative research, precisely developed instruments are used to measure the variables. Confirmation of the validity and reliability of measurement instruments used in research is a prerequisite for assuring the integrity of study findings (DeVon et al., 2007). Construct validity and internal reliability of the EBPQ, self-report questionnaire for measuring the implementation of evidence-based practice used in this research was confirmed by Upton and Upton (2006).

3.7 1 Validity

Validity refers to the ability of an instrument to measure what it was designed to measure. DeVon et al. (2007) define validity as the ability of the instrument to measure the attributes of the construct under study. Factor analysis can assess the validity of an instrument by finding if the instrument measures the postulated factor. DeVon et al. (2007) define factor analysis as a statistical method commonly used during instrument development to analyze relationships among large numbers of variables and to explain these variables in terms of their common underlying dimensions (factors). Principal component factor analysis was used to determine the structure of the EBPQ questionnaire (Upton & Upton, 2006). "Questions were considered as contributing to a subscale if they had a factor loading of at least 0.4 on that factor" (Upton & Upton, 2006, p.456). A factor is a combination of test items that are believed to belong together. Related items define a part of the construct and are grouped together (DeVon et al., 2007). Unrelated items do not define the construct and should be deleted from the tool (Munro, 2005). This statistical approach involves finding a way of condensing the information contained in a number of original variables into a smaller set of dimensions (factors) with a minimum loss of information (DeVon et al., 2007).

The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy is used to determine if a data set is appropriate for factor analysis and should be greater than 0.5 for a satisfactory factor analysis to proceed. Large values for the KMO measure indicate that a factor analysis of the variables is a good idea. "A KMO score of 0.861 was achieved for the EBPQ suggesting that factor analysis was appropriate for this data set" (Upton & Upton, 2006, p.456).

Construct validity is the degree to which an instrument measures the construct it is intended to measure (Minichiello et al., 2004). It is supported if the instruments items are related to its operationally defined theory and concepts (DeVon et al., 2007). "Construct validity of the EBPQ was established by exploring the correlation between questionnaire scores and an independent measure of awareness of evidence-based practice, which involved asking respondents if they had any knowledge of certain aspects of a local initiative to promote evidence-based practice" (Upton & Upton, 2006, p.456). Correlation coefficients were found to be in the range of 0.3-0.4 ($P < 0.001$), suggesting a positive but moderate relationship.

Discriminant validity was assessed by comparison of subscale scores between respondents with knowledge of the local initiatives and those without this knowledge, using an independent samples t-test (Upton & Upton, 2006). “The results indicated that those with knowledge of the local initiative had a better attitude, more frequent practice that was evidence-based and better knowledge of evidence-based practice” (Upton & Upton, 2006, p.456). A successful evaluation of discriminant validity shows that a test of a concept is not highly correlated with other tests designed to measure theoretically different concepts.

3.7 2 Reliability

Reliability pertains to the ability of an instrument to consistently measure an attribute (DeVon et al., 2007). A reliable measure is one that can produce the same results if the same activities are measured again by the same scale (LoBiondo-Wood & Haber, 1998). Cronbach’s alpha coefficient is the most frequently used statistic to show internal consistency reliability (DeVon et al., 2007) it is the most widely used by nurse researchers (Polit & Beck, 2004). Internal consistency indicates how well the items on a tool fit together conceptually. If items are not correlated, the value of the alpha is reduced (DeVon et al., 2007). Inflated alpha values are achieved when computed for an entire scale (DeVon et al., 2007) therefore coefficient alpha should be computed for each subscale (Nunnally & Bernstein, 1994).

Internal consistency of the EBPQ was assessed by Cronbach’s alpha coefficient. Cronbach’s was 0.87 for the entire questionnaire. “Good internal reliability was also confirmed for each of the subscales with Cronbach’s being 0.85 for the practice of evidence-based practice subscale, and for the attitude toward evidence-based practice subscale Cronbach’s was 0.79. Cronbach’s was 0.91 for the knowledge/skills associated with evidence-based practice subscale” (Upton & Upton, 2006, p.456). A coefficient alpha of 0.70 is acceptable for new scales (DeVellis, 2003). In Koehn and Lehman’s (2008) study using the EBPQ, Cronbach’s alpha was 0.94 (entire questionnaire), 0.87 (practice of evidence-based practice), 0.72 (attitude toward evidence-based practice) and 0.95 (Knowledge/skills associated with evidence-based practice).

3.8 Summary

This chapter has provided an overview of the research design and method used to conduct this study. The design for this study was a non-experimental descriptive approach using a self-report measure of perceptions, attitudes and knowledge/skills associated with evidence-based practice. The ethical issues considered to ensure the protection of participants rights were discussed in this chapter and the data collection procedure was also identified. The validity and reliability of the EBPQ utilized in this study has been discussed. The results of this study are presented in the next chapter.

Chapter Four: Results

The previous chapter outlined the research design and the methods utilized to conduct the study. The findings of this non-experimental descriptive study examined the research questions: As reported earlier the research questions were based on those developed by Kohen and Lehman (2008).

- What are primary health care nurses' perceptions of their use of evidence-based practice?
- What are primary health care nurses' attitudes toward evidence-based practice?
- What is primary health nurses' perceptions of their knowledge/skills associated with evidence-based practice?
- What is the effect of educational preparation on practice, attitudes and knowledge/skills associated with evidence-based practice?

This chapter describes the results of the study. Data were analysed using descriptive statistics. The first section describes the demographic information relating to the participants. The second section provides a description and statistical analysis of the strength of the relationship of some demographic factors to the knowledge and skills relevant to the implementation of evidence-based practice, the attitudes toward evidence-based practice, and the practice of individual components of evidence-based practice. The findings are presented in tables, figures and text.

4.1 Data Screening

Before any data analysis was undertaken all data were screened for accuracy, missing values, coding errors and errors in participants' responses. Any data sets that were found to be incomplete were removed from the overall data set. This resulted in fifty four complete data sets available for analysis. One was removed from the analysis as it was incomplete.

4.2 Data Analysis

There were complete data sets available for fifty four participants. Data were coded and entered into Statistical Package for the Social Sciences, (SPSS Inc) for analysis. Once the data were entered they were screened before subsequent analysis. Screening is a process that identifies real or potential errors in the data entry (O'Rourke, 2003). The errors need to be corrected "cleaned" before analyzing the data. In the current study data were screened and cleaned using a simple visual scanning technique. Spearman's rank correlation coefficient (r_s), a non-parametric technique, was used to examine the strength of relationship between variables. Prior to the correlation analysis, the correlation data was ranked to reduce the effects of outliers and prevent the distortion of the correlation results. Outliers are data that plot well away from the main body of the data, and if not considered, result in gross distortion of the results. If the sample size is less than 50, the effect of outliers is critical (Minichiello, Sullivan, Greenwood, & Axford, 1999). As reported earlier the sample size in the current study was fifty four. Spearman's rank correlation coefficient does not require the variables to be measured on interval scales; it can be used for variables measured at the ordinal level. In this study ordinal measurements were used. Correlations are applied to data to identify the relationship between two quantitative variables (Myles & Gin, 2000). Correlation coefficients (r_s) are numbers covering the full range from 0, which describes no association to +1 or -1, which describes the strength of the association. Generally, $r_s > 0.8$ is considered a very high association, 0.6-0.8 a high association, 0.3-0.6 a moderate association, and <0.3 a low association (Minichiello et al., 1999). A value of -1.0 describes a perfect negative association while a value of 1.0 describes a perfect positive association (Minichiello et al., 1999; Myles & Gin, 2000). The limitation of utilizing correlations in research is that the resulting associations do not necessarily imply causation (Myles & Gin, 2000).

Statistical Significance is said to exist when the probability that the observed findings are due to chance are very low. Very low is usually defined as less than 5 chances in 100, which is referred to as .05 level of significance. The degree of difference is expressed as the P-value, with a P-value (p) less than .05 being regarded as statistically significant (Minichiello et al., 1999).

In this study Cronbach's alpha coefficient for the entire questionnaire was 0.956 and as such was higher than in the study by Upton and Upton (2006) who reported a coefficient of 0.87. Coefficient alpha is sample specific; in other words, it is the measure of the internal consistency for the test response from the current participants. Therefore alpha coefficients should be computed each time the test is administered (Waltz, Strickland, & Lenz, 2005). In the present study, good internal reliability was confirmed for two of the subscales with the Cronbach's alpha coefficient being 0.908 for the practice of individual components of evidence-based practice subscale, and 0.953 for the knowledge and skills relevant to the implementation of evidence-based practice subscale. However, only 0.694 was recorded for the attitude towards evidence-based practice subscale.

4.3 Sample Description

Demographic data are presented in Table 1. Respondents were predominantly female 96.3% ($n=52$), a higher percentage than the total NZ nursing and midwifery workforce, which is 90.9% female (New Zealand Health Information Service, 2004). The majority 33.3% ($n=18$) of respondents were between 50 and 59 years and 20.4% ($n=11$) in the 40-49 years age bracket. Six respondents were older than sixty years. The overall mean age for NZ nurses in 2006 was 45.3 years (Alpass & Mortimer, 2007). The ethnic composition of the respondent group was NZ European 57.4%, Maori 5.6%, other European 22.2%, Pacific 5.6%, Asian 5.6% and 1.9% identified themselves as from other ethnic groups. The composition of the overall NZ Registered Nurse workforce is NZ European 68.3%, Maori 7.5%, other European 9.7%, Pacific 2.9%, Asian 5.2% and 6.3% from other ethnic groups (New Zealand Health Information Service, 2004).

Varying lengths of time practicing as registered nurses were reported, the largest group 48.1% ($n=26$) practicing as a registered nurse for more than fifteen years; a 25.9% (14) having practiced as a registered nurse for ten to fifteen years; the median range was more than fifteen years 48.1% ($n=26$). Participant's reported varying lengths of time practicing in the primary health care setting; 31.5% ($n=17$) had practiced in primary health care for less than five years, 22.2% ($n=12$) reported practicing in primary health care for more than fifteen years; the median range was five to ten years 25.9% ($n=14$).

Table 1. Summary of demographic information

	Number of Respondents	Percentage of Respondents
Age (Years)		
20-29	9	16.7%
30-39	7	13.0%
40-49	11	20.4%
50-59	18	33.3%
60-69	6	11.1%
Missing data	3	5.6%
Gender		
Female	52	96.3%
Male	2	3.7%
Ethnicity		
NZ European	31	57.4%
Other European	12	22.2%
NZ Maori	3	5.6%
Pacific Nation	3	5.6%
Asian	3	5.6%
Other	1	1.9%
Missing data	1	1.9%
How long registered		
<5 years	6	11.1%
5-10 years	6	11.1%
10-15 years	14	25.9%
>15 years	26	48.1%
Missing data	2	3.8%
How long in primary health care		
<5 years	17	31.5%
5-10 years	14	25.9%
10-15 years	10	18.5%
>15 years	12	22.2%
Missing data	1	1.9%
Weekly hours worked		
40 hours	17	31.5%
<40 hours	36	66.7%
Missing data	1	1.9%

NB: total percentages may not always equal 100% due to the effects of rounding.

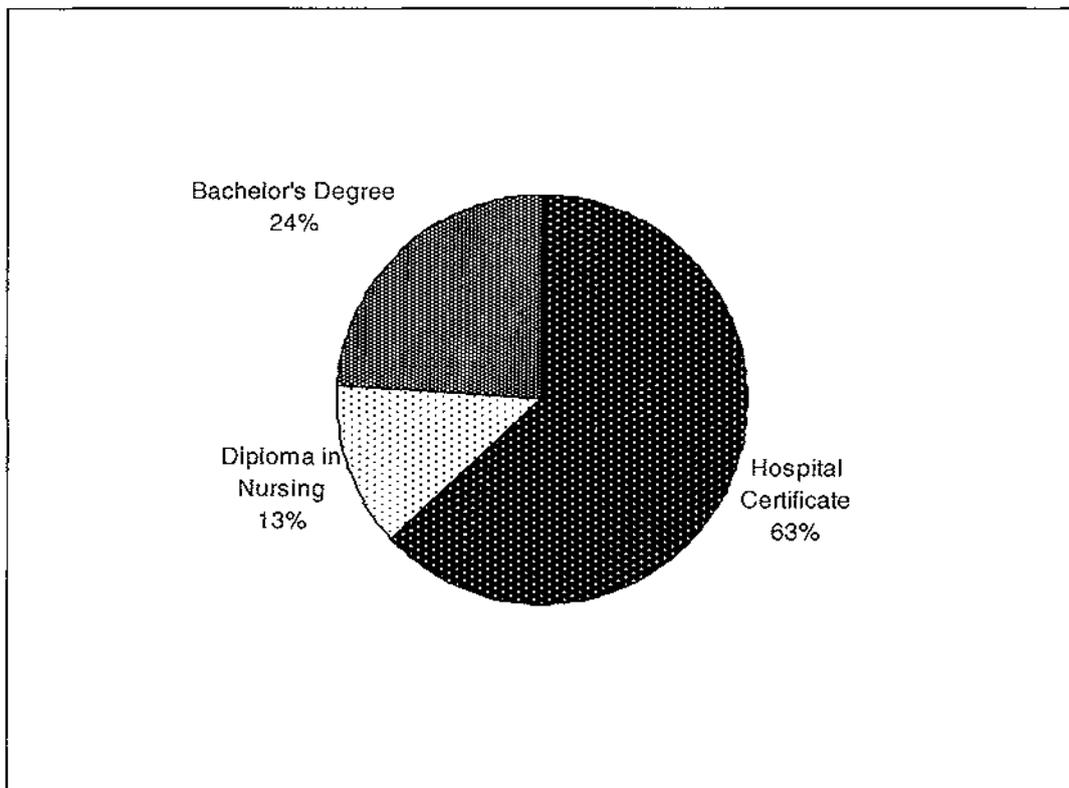


Figure 1. Registration level (n = 54)

The majority of respondents sixty three percent ($n=34$) reported achieving their nursing registration through hospital based certification. Thirteen percent ($n=7$) held a diploma in nursing. Twenty four percent ($n=13$) of respondents held a bachelors degree. In the NZ Registered Nurse workforce 47.5% ($n=19,355$) achieved their nursing registration through hospital based certification, 26.5% ($n=10,796$) of the NZ Registered Nurse workforce hold a diploma in nursing and 26% ($n=10,595$) hold a bachelors degree (New Zealand Health Information Service, 2004).

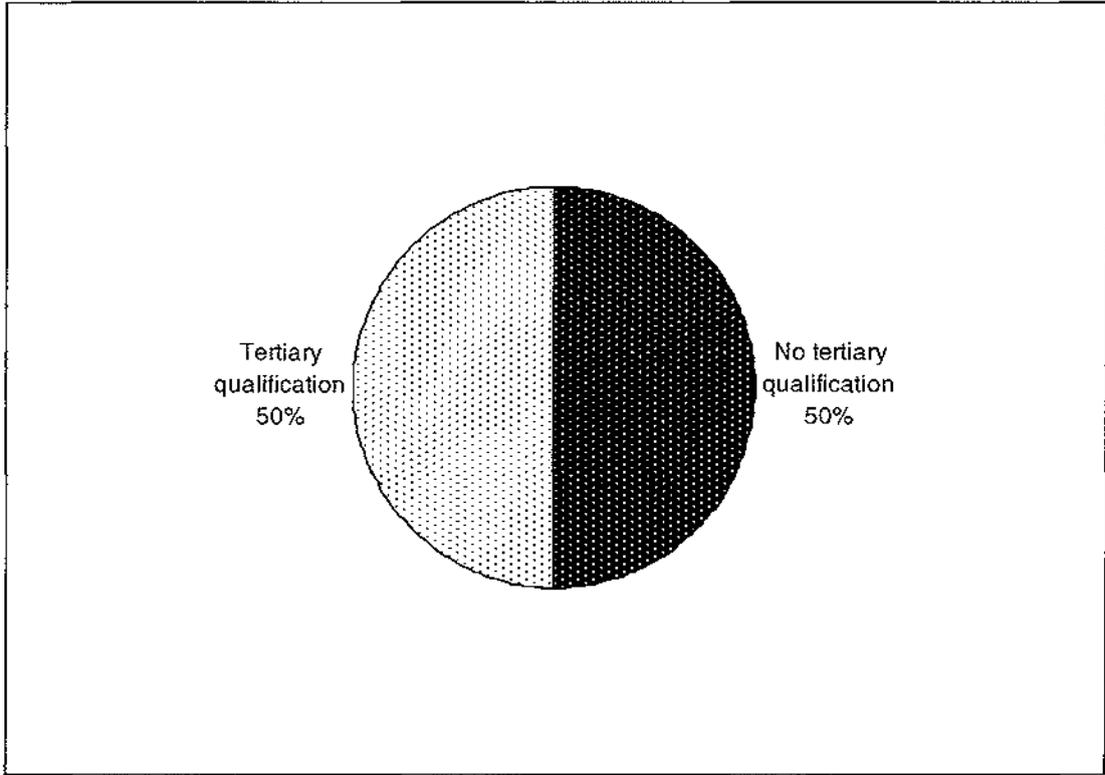


Figure 2. Tertiary qualification (n=54)

Fifty percent ($n=27$) of respondents reported having a tertiary qualification and 50% ($n=27$) reported not having a tertiary qualification.

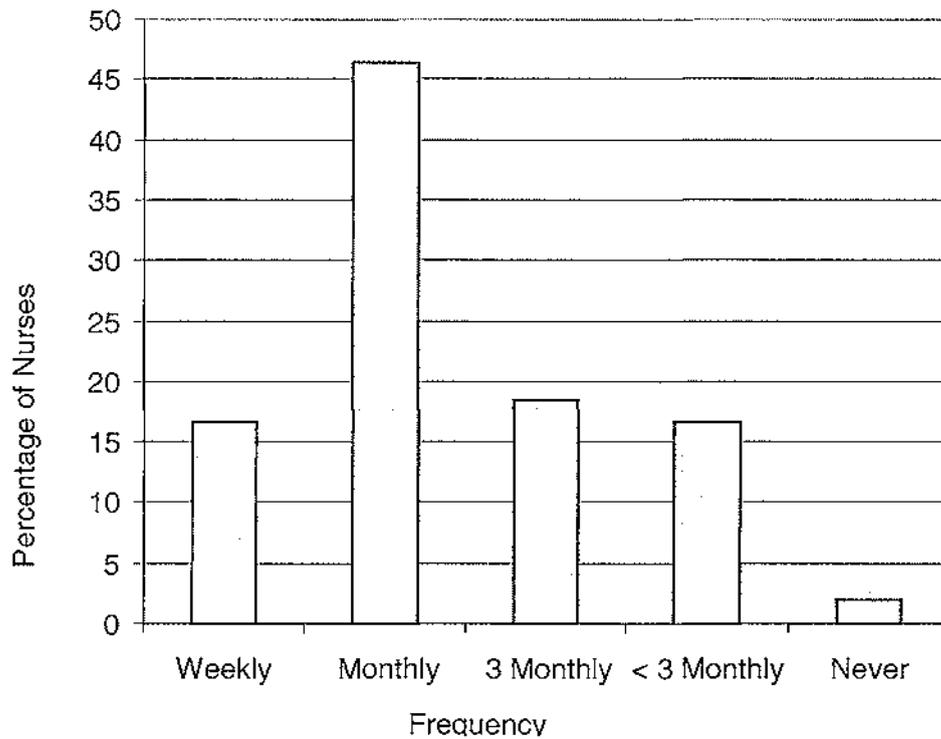


Figure 3. Frequency of reading professional journals

The picture which emerges shows that only 16.7% ($n=9$) reported reading nursing research more frequently than once a month. The majority of respondents (46.3%) reported reading research monthly. However, 35.2% ($n=19$) report reading research every three months or less. Only a minority of the sample reported never reading research (1.9%).

4.4 Relationships between Variables

4.4.1 Knowledge and Skills Relevant to the Implementation of EBP

Table two shows that knowledge and skills relevant to the implementation of evidence-based practice had a statistically significant relationship with the practice of individual components of evidence-based practice ($r_s=0.744$, $p=.000^{**}$) and with attitudes toward evidence-based practice ($r_s=0.532$, $p=0.000^{**}$). Knowledge and skills relevant to the implementation of evidence-based practice were also shown to have a significant positive correlation with both level of registration preparation ($r_s=0.528$, $p=0.000^{**}$) and tertiary qualifications ($r_s=0.351$, $p=0.016^*$). The length of time practising in primary health care was negatively correlated with knowledge and skills relevant to the implementation of evidence-based practice ($r_s=-0.412$, $p=-0.004^{**}$). There was no significant correlation between knowledge and skills relevant to the implementation of evidence-based practice and length of time registered and frequency of reading professional journals.

Table 2. Relationship between respondent characteristics and knowledge/skills relevant to the implementation of EBP

Characteristics	Correlation Coefficient (r_s)	p Value
Attitude towards EBP	.532	.000**
Practice of individual components of EBP	.744	.000**
Length of time practicing as a registered	-.224	.134
Length of time practicing in primary health care	-.412	.004**
Level of registration preparation	.528	.000**
Tertiary Qualification	.351	.016*
Frequency of reading professional journals	.036	.812

* $p < .05$ moderate level of significance, ** $p < .01$ high level of significance, $p > .05$ no significant correlation

4.4 2 Attitudes toward EBP

Correlational analysis showed that attitudes toward evidence-based practice were found to have a statistically significant relationship with the practice of individual components evidence-based practice of ($r_s=0.516$, $p=.000^{**}$) as shown in Table 3. Attitudes toward evidence-based practice were not significantly correlated with length of time registered, length of time practicing in primary health care, level of registration preparation, tertiary qualifications and frequency of reading professional journals.

Table 3. Relationship between respondent characteristics and Attitudes toward EBP

Characteristics	Correlation Coefficient	<i>p</i> Value
Practice of individual components of EBP	.516	.000**
Length of time practicing as a registered	.001	.993
Length of time practicing in primary health care	-.199	.162
Level of registration preparation	-.216	.128
Tertiary Qualification	.245	.083
Frequency of reading professional journals	.155	.278

* $p<.05$ moderate level of significance, ** $p<.01$ high level of significance, $p>.05$ no significant correlation

4.4 3 Practice of Individual Components of EBP

Results showed that the practice of individual components of evidence-based practice were positively correlated with level of registration preparation ($r_s=0.306$, $p=0.026^*$) and frequency of reading professional journals ($r_s=0.303$, $p=0.028^*$). Findings from this study showed a significant negative correlation between practice of individual components of evidence-based practice and length of time practicing as a registered nurse ($r_s=-0.288$, $p=0.038^*$). The length of time practicing in primary health care was also found to have a significant negative correlation with the practice of individual components of evidence-based practice ($r_s=-0.312$, $p=0.024^*$). There was no significant correlation between practice of individual components of evidence-based practice and tertiary qualifications.

Table 4. Relationship between respondent characteristics and practice of individual components of EBP

Characteristics	Correlation Coefficient	<i>p</i> Value
Length of time practicing as a registered	-.288	.038*
Length of time practicing in primary health care	-.312	.024*
Level of registration preparation	.306	.026*
Tertiary Qualification	.162	.247
Frequency of reading professional journals	.303	.028*

* $p<.05$ moderate level of significance, ** $p<.01$ high level of significance, $p>.05$ no significant correlation

4.4.4 Length of Time Practicing as a Registered Nurse

There was a significant positive correlation between the length of time practicing as a registered nurse, and length of time practicing in primary health care ($r_s=0.672$, $p=0.000^{**}$). As shown in Table 5, there was a significant negative correlation between length of time practicing as a registered nurse and the level of registration preparation ($r_s=-0.570$, $p=0.000^{**}$), tertiary qualifications ($r_s=-0.306$, $p=0.026^*$) and the frequency of reading professional journals ($r_s=-0.286$, $p=0.038^*$).

Table 5. Relationship between respondent characteristics and length of time practicing as registered nurse

Characteristics	Correlation Coefficient	<i>p</i> Value
Length of time practicing in primary health care	.672	.000**
Level of registration preparation	-.570	.000**
Tertiary Qualification	-.306	.026*
Frequency of reading professional journals	-.286	.038*

* $p<.05$ moderate level of significance, ** $p<.01$ high level of significance, $p>.05$ no significant correlation

4.4 5 Length of Time Practicing in Primary Health Care

Length of time practicing in primary health care was shown to have a significant negative correlation with level of registration preparation. This variable was not significantly related to tertiary qualifications and frequency of reading professional journals.

Table 6. Relationship between respondent characteristics and length of time practicing in primary health care

Characteristics	Correlation Coefficient	<i>p</i> Value
Level of registration preparation	-.582	.000**
Tertiary Qualification	-.262	.058
Frequency of reading professional journals	-.182	.191

* $p < .05$ moderate level of significance,
 $p > .05$ no significant correlation

** $p < .01$ high level of significance,

4.4 6 Level of Registration Preparation and Tertiary Qualifications

There was a significant positive correlation between level of registration preparation and tertiary qualification. There was no significant relationship between level of registration preparation and frequency of reading professional journals.

Table 7. Relationship between respondent characteristics and level of registration preparation

Characteristics	Correlation Coefficient	<i>p</i> Level
Tertiary Qualification	.408	.002**
Frequency of reading professional journals	.092	.507

* $p < .05$ moderate level of significance,
 $p > .05$ no significant correlation

** $p < .01$ high level of significance,

4.5 Summary

The results of the present study demonstrated that knowledge and skills relevant to the implementation of evidence-based practice, and nurse's attitudes toward evidence-based practice are important factors influencing the practice of individual components of evidence-based practice. Educational preparation of the nurses in this study was also shown to have a positive influence on practice of individual components of evidence-based practice and the knowledge/skills relevant to the implementation of evidence-based practice. The following chapter provides a discussion on the interpretation of the study findings in relation to the literature. In addition, study limitations, implications for nursing practice and recommendations for further research are presented.

Chapter Five: Discussion

The primary aim of this study was to investigate primary health care nurses' perceptions of their use of evidence-based practice, attitudes toward evidence-based practice and knowledge/skills associated with the implementation of evidence-based practice. In this chapter, a summary of the findings are discussed as they relate to the literature in an attempt to draw conclusions. An examination of the general limitations of the current research follows. A number of implications for primary health care nursing are also highlighted along with directions and recommendations for future research. Finally conclusions are offered.

5.1 Demographics

Demographic data gathered from this survey identified some interesting features in the categories of the age of nurses and the qualifications of nurses. Within this study group, nurses aged between 50 and 59 years (33.3%) and those with > 15 years of experience (48.1%) returned most of the questionnaires. Over half the participants (63%) were trained in the apprenticeship (hospital certificate) system while only 24% had an undergraduate degree. The results revealed that half the participants reported having a tertiary qualification; this is inconsistent with the lack of postgraduate qualifications found with other studies involving nurses (Bonner & Sando, 2008; Hegney & McCarthy, 2000; Kenny & Duckett, 2003).

5.2 Attitudes toward evidence-based practice.

The results of this study of primary health care nurses showed that nurse's attitudes toward evidence-based practice were associated with the practice of individual components of evidence-based practice. These findings were consistent with previous studies, which concluded that positive attitudes on the part of nursing staff toward nursing research were important for the effective utilization and application of research results in nursing practice (Camiah, 1997; Ehrenfeld & Eckerling, 1991; Hatcher & Tranmer, 1997; Hicks & Hennessy, 1997; Upton & Upton, 2006). These results were also consistent with the previous literature that highlighted one of the key factors

influencing the changeover to research-based nursing was the general attitudes of nursing staff (Berggren, 1996; Hicks, 1996; Parahoo, 1998; Parahoo & McCaughan, 2001). Frasure (2008) reported that positive individual beliefs and attitudes were the only determinants that have been shown to have a positive association with research utilization.

The results of this study showed that, level of registration preparation and length of time practicing in primary health care were characteristics which had no significant relationship to these nurses' attitudes toward evidence-based practice. These findings were consistent with Olade's (2003) report that years of experience in nursing, and practice setting had no significant relationship with nurses' overall attitudes toward research.

In the present study, nurses level of registration preparation and tertiary qualifications had no significant relationship to these nurses' attitudes toward evidence-based practice. The findings of the current study were inconsistent with previous research conducted by Olade (2003) which reported that attitudes toward research utilization were associated with the nurses' level of education. Nurses without a tertiary qualification are not expected to have research in their curriculum and consequently harbour less favourable attitudes toward research (Olade, 2003). Rogers (2000) found that one of the effects of education about research was improved attitudes toward research.

5. 3 Level of Educational Preparation

Level of registration preparation was one of the characteristics' of the nurses in this study which had a positive association with the practice of individual components of evidence-based practice and with the knowledge and skills relevant to the implementation of evidence-based practice. Nurses who had completed tertiary education were also found to have increased knowledge and skills relevant to the implementation of evidence-based practice. The results of the present study support the findings of previous studies that concluded that educational preparation matters in terms of a commitment to research utilization as an integral component of nursing practice (Brown, 1997; Kajermo et al., 2000; Nilsson, Kajermo, Nordstrom, Krusebrant, & Bjorvell, 1998; Olade, 2004). As noted previously, the literature reports that training in

different aspects of research increases nurses' own research activity, encourages them to search for research results and promotes the application and utilization of research knowledge in practice (Kuuppelomaki & Tuomi, 2005; Lacey, 1994; Percy, 1995).

5.4 Knowledge and Skills

Skills in searching the literature and critically appraising the research findings are identified in the literature as being crucial to the utilization of research findings (Armitage, 1990; Closs & Cheater, 1994; Goode et al., 1987). In the present study a statistically significant relationship was identified between the knowledge and skills relevant to the implementation of evidence-based practice and the practice of individual components of evidence-based practice. These findings suggest that improving nurses' understanding of research methods and skills for critiquing research might improve research utilization. These results were consistent with previous studies (Oranta et al., 2002; Roxburg, 2006; Veeramah, 2004).

Additionally, knowledge and skills relevant to the implementation of evidence-based practice were found to have a positive association with attitudes toward evidence-based practice. This is supported by previous research conducted by Berggren (1996), Bjorkstrom and Hamrin (2001), Hicks (1995) and Lacey (1994).

5.5 Length of Time Practicing as a Registered Nurse

As reported earlier, the majority 48.1% ($n=26$) had practiced as a registered nurse for more than fifteen years and 63% ($n=34$) achieved their nursing registration through hospital based certification. The results showed that a significant negative correlation existed between the length of time practicing as a registered nurse and the type of registration preparation. The longer nurses have been qualified the more likely they are to have received their registration through hospital certification. Rogers (2000) investigated the influence of education on research utilization and concluded that an association could be found between having a higher level of education and research utilization. Nurses educated outside the tertiary sector formed the majority of nurses in this study. Olade (2003) suggests with the lack of research in the curriculum of non-university-prepared nurses, there is a need for continuing education to increase research

awareness and research utilization among most practicing nurses. There is a need to stress the significance of research findings in evidence-based practice so nurses can see more clinical relevance for nursing research (Olade, 2003).

According to the results of this study a strong positive relationship exists between the length of time practicing as a registered nurse and the length of time practicing in primary health care. Therefore it is not surprising that the results showed a significant negative correlation between length of time practicing in primary health care and the practice of individual components of evidence-based practice and having the knowledge and skills relevant to the implementation of evidence-based practice. In other words, in the present study, the longer nurses had worked in the primary health care setting the more likely they were to have received their education through hospital based certification. Nurses trained outside the university level are not expected to have research as part of their curriculum (Olade, 2003). These results support previous studies that identified an association between level of education preparation and the knowledge and skills relevant to the implementation of research findings in practice and the practice of individual components of evidence-based practice (Kajermo et al., 2000; Nilsson et al., 1998).

5.6 Frequency of Reading Professional Journals

There has been limited research on the extent to which nurses read professional journals (Oermann et al., 2008). Only 16.7% who responded to the present survey reported reading nursing research more frequently than once a month. This supports the findings of Prvikoff et al. (2005) who reported that nurses seldom use journal articles, research reports and libraries for evidence to guide their practice. In clinical settings, journals, books and similar resources that provide evidence for practice are often not readily available when nurses need the information (Oermann et al., 2008). Nurses lack time to locate such resources (Estabrooks et al., 2005) when faced with questions about their practice, nurses seek information from their colleagues and rely on their personal experiences when they are unsure about clinical decisions (Pravikoff et al., 2005).

5.7 General Limitations

The present study had methodological limitations common to all survey designs. One of the main disadvantages of using a self-completed postal questionnaire is the potential for a low response rate (Robson, 2002). Although the response rate was lower than a desired rate of at least 65%, the 50% rate falls within the norm (Polit & Beck, 2008). It is possible that nurses who had favourable attitudes toward using evidence in their practice were more likely to respond. Thus, these findings may not be representative of the population of primary health care nurses and may be biased towards nurses who feel confident with the use of evidence-based practice.

Research using self report questionnaires relies on truthful responses from participants to draw meaningful conclusions. There may be a possibility in this research that socially desirable answers were sometimes given. Socially desirable responding is the tendency for participants to present a favourable image of themselves and is most likely to occur in responses to socially sensitive questions (M. King & Bruner, 2000). Unfortunately in the present study there is no way of verifying the accuracy of the reports. However despite these limitations, important trends relating to the implementation of evidence in practice have been identified.

5.8 Implications for Primary Health Care Nursing Practice

The potential for primary health care nurses to improve health outcomes through the use of best evidence is acknowledged. The findings in this study demonstrated that knowledge and skills relevant to the implementation of evidence-based practice, nurse's attitudes toward evidence-based practice and the educational preparation of the nurses were important factors influencing the practice of individual components of evidence-based practice. Therefore the emphasis should be on creating and promoting a culture, in which primary health care nurses recognize the need for improving their care, seek the knowledge and skills to do so, and feel supported, encouraged and valued.

Within the New Zealand primary health care setting, nursing leadership is acclaimed as a major factor influencing clinical decision-making and improving quality of care. Having support from nurse leaders has been identified as having a positive influence on individual nurses' use of evidence in clinical practice. Whilst the individual nurse may

be responsible for making his/her practice more research transparent, strong nursing leadership is crucial for the implementation of research evidence in practice (Chummun & Tiran, 2008). Leadership styles of senior clinical nurses in promoting a team culture that is client-centred, values members and promotes a learning environment that supports evidence-based practice is recognized (McCormack et al., 2002). More must be done toward identifying and overcoming the barriers to the utilization of research, such as the lack of knowledge and skills to read research, negative attitudes toward research and lack of support and resources in clinical practice (Parahoo, 1998). Despite the introduction of research methods into nursing curricula, there are still many nurses who have not been equipped with the appropriate knowledge and skills to implement evidence in practice. Higher educational levels have been found to positively affect perceptions of research in practice (Karkos & Peters, 2006; McCleary & Brown, 2003). Melnyk et al.(2004) identified educational interventions targeted toward strengthening nurses' attitudes about the benefit of evidence-based practice, as a way of motivating nurses to learn and engage in evidence-based practice. The implementation of educational interventions is identified as an integral aspect of implementing evidence-based practice (Koehn & Lehman, 2008) and enhancing primary health care nurses' knowledge and skill relevant to implementing evidence in practice. Nurse leaders need to realize the different educational preparation of nurses and become proactive in modelling, mentoring and providing other nurses with the information necessary to become involved in implementing research based and other evidence in practice (McCloskey, 2008).

5.9 Recommendations

In an environment with an increasing focus on both the accountability of health expenditure and in particular reducing inequalities in health, it would be hazardous to ignore the implementation of evidence-based practice by primary health care nurses. In the primary health care setting very little research has been undertaken from a nursing perspective either in New Zealand or internationally. The present study explored nurses' day-to-day use of evidence-based practice with a focus on examining the implementation of research findings in practice. The findings of this study are supported by current literature that identifies the implementation of educational interventions as an integral aspect of implementing evidence-based primary health care.

Research using random sampling is needed to assess whether the findings in this study can be generalized to the greater population of primary health care nurses. Further research is also recommended to examine the different types of evidence used to inform practice and factors influencing the achievement of evidence-based practice in primary health care including the organizational and contextual factors.

Quantitative data enables the researcher to make statements about a group and describe the relationship between variables, however, it does not allow the researcher to explain or give meaning to the behaviour of the group. Whereas quantitative methods may work best in isolating and identifying the correlates associated with variation at specific moments in time, qualitative techniques are particularly good at gaining insight into the processes and events that lead up to the observed variation and have the key advantage of providing unexpected insights (Borkan, 2004). Mixed methods research refers to those studies or lines of inquiry that integrate one or more qualitative and quantitative techniques for data collection and/or analysis. They have great potential for exploring new topics or familiarizing researchers with a new area (Borkan, 2004). It is recommended that to have a more complete understanding of primary health care nurses' knowledge/skills and attitudes toward evidence-based practice mixed method research should also be undertaken.

Concluding Comments

This study examined primary health care nurses' perceptions of their use of evidence-based practice, attitudes toward evidence-based practice and their knowledge/skills associated with evidence-based practice. The effect of educational preparation on practice, attitudes and knowledge/skills towards evidence-based practice was also examined.

There is a lack of research in New Zealand and internationally that has studied nurses' implementation of research findings in primary health care. Providing evidence-based primary health care has the potential to improve the health and well being of people and communities. To enable nurses to provide a coherent primary health care service they

need to be skilled in evidence acquisition, interpretation and implementation and be able to evaluate the impact of the implemented evidence on health and wellbeing.

Educational programmes are needed that provide nurses with the necessary skills to enable them to use research findings effectively in clinical practice. One of the pivots of evidence-based practice is the ability of nurses to access; accurately interpret and appropriately implement research-based and other evidence for practice. Furthermore within the New Zealand primary health care setting nursing leadership needs to be promoted as an organizational strategy for the implementation of evidence-based practice and improved health outcomes.

The present research identified that primary health care nurses' attitudes toward evidence-based practice, knowledge and skills relevant to the implementation of evidence-based practice and the educational preparation of the nurses were important factors influencing the effective utilization and application of research results in practice. Nurses who had completed tertiary education were also found to have increased knowledge and skills relevant to the implementation of evidence-based practice. The findings of the current study relating to the incorporation of evidence into everyday practice are congruent with the literature.

REFERENCES

- Al-Ansary, L. A., & Khoja, T. A. (2002). The place of evidence-based medicine among primary health care physicians in Riyadh region, Saudi Arabia. *Family Practice, 19*(5), 537-542.
- Alpass, F., & Mortimer, R. (2007). *Ageing workforces and ageing occupations: A discussion paper*. Wellington: Department of Labour.
- Armitage, S. (1990). Research utilization in practice. *Nurse Education Today, 10*, 10-15.
- Austin, L., Luker, K., & Martin, R. (2006). Clinical nurse specialist and the practice of community nurses. *Journal of Advanced Nursing, 54*(5), 542-550.
- Australian Nursing and Midwifery Council. (2006). National competency standards for the registered nurse. Retrieved March 12, 2008, from http://www.anmc.org.au/docs/competency_standards_RN.pdf.
- Banning, M. (2005). Conceptions of evidence, evidence-based medicine, evidence-based practice and their use in nursing: Independent nurse prescribers' views. *Journal of Clinical Nursing, 14*(4), 411-417.
- Baum, M., Traynor, F., & Brice, G. (1992). Community development and health-building on experience. In H. Gardener (Ed.), *Health policy development, implementation and evaluation in Australia*. Melbourne: Churchill Livingstone.
- Berggren, A. C. (1996). Swedish midwives' awareness of, attitudes to and use of selected research findings. *Journal of Advanced Nursing, 23*(3), 462-470.
- Bero, L. A., Grilli, R., Grimshaw, J. M., Harvey, E., Oxman, A. D., & Thompson, M. A. (1998). Closing the gap between research and practice: An overview of the systematic reviews of interventions to promote the implementation of research findings. *British Medical Journal, 317*(7156), 465-468.
- Bistro, J., & Sutra, W. A. N. (1993). Research utilization: Making the link to practice. *Journal of Nursing Staff Development, 9*(1), 28-34.

- Bjorkstrom, M., & Hamrin, E. (2001). Swedish midwives' attitudes towards research and development within nursing. *Journal of Advanced Nursing*, 34(5), 706-714.
- Blanchard, H. (1996). Factors inhibiting the use of research in practice. *Professional Nurse*, 11(8), 524.
- Bond, C. S. (2007). Nurses' requirements for information technology: A challenge for educators. *International Journal of Nursing Studies*, 44, 1075-1078.
- Bondas, T. (2006). Paths to nursing leadership. *Journal of Nursing Management*, 14(5), 332-329.
- Bonner, A., & Sando, J. (2008). Examining the knowledge, attitude and use of research by nurses. *Journal of Nursing Management*, 16(3), 334-343.
- Borbasi, S. A. (1999). Advanced practice/expert nurses: Hospitals can't live without them. *Australian Journal of Advanced Nursing*, 16(3), 21-29.
- Borkan, J. M. (2004). Mixed methods studies: A foundation for primary care. *Annals of Family Medicine*, 2, 4-6.
- Bostrom, J., & Wise, L. (1994). Closing the gap between research and practice. *Journal of Nursing Administration*, 24, 22-27.
- Bower, H. (1996). Internet sees growth of universal health claims [Electronic Version]. *British Medical Journal* 313(7054), 381. Retrieved 12, January 2008.
- Brink, P. J., & Wood, M. J. (1983). *Basic steps in planning nursing research*. California: Wadsworth.
- Brown, D. S. (1997). Nursing education and nursing research utilization: Is there a connection in clinical settings? *Journal of Continuing Education Nursing*, 28(6), 258-262.
- Bryant-Lukosius, D., DiCenso, A., Browne, G., & Pinelli, J. (2004). Advanced practice nursing roles: Development, implementation and evaluation. *Journal of Advanced Nursing*, 48(5), 519-529.

- Bryar, R. M., Closs, S. J., Baum, G., Cooke, J., Griffiths, J., & Hostick, T. (2003). The Yorkshire BARRIERS project: Diagnostic analysis of barriers to research utilisation. *International Journal of Nursing Studies*, 40(1), 73-84.
- Burke, L. E., Schlenk, E. A., Sereika, S. M., Cohen, S. M., Happ, M. B., & Dorman, J. S. (2005). Developing research competence to support evidence-based practice. *Journal of Professional Nursing*, 21(6), 358-363.
- Burns, N., & Grove, S. K. (2007). *Understanding nursing research: Building an evidence-based practice* (3rd ed.). M O: Saunders Elsevier.
- Camiah, S. (1997). Utilization of nursing research in practice and application strategies to raise research awareness amongst nurse practitioners: A model for success. *Journal of Advanced Nursing*, 26, 1193-1202.
- Carrion, M., Woods, P., & Norman, I. (2004). Barriers to research utilisation among forensic mental health nurses. *International Journal of Nursing Studies*, 41(6), 613-619.
- Champion, V. L., & Leach, A. S. (1986). The relationship of support, availability, and attitude to research utilization. *Journal of Nursing Administration*, 16(3), 19-37.
- Chummun, H., & Tiran, D. (2008). Increasing research evidence in practice: A possible role for the consultant nurse. *Journal of Nursing Management*, 16(3), 327-333.
- Closs, S. J., & Bryar, R. (2001). The BARRIERS scale: Does it 'fit' the current NHS research culture. *Nursing Times Research*, 6(5), 853-865.
- Closs, S. J., & Cheater, F. M. (1994). Utilization of nursing research: Culture, interest and support. *Journal of Advanced Nursing*, 19(4), 762-773.
- Cole, F. L. (1995). Implementation and evaluation of an undergraduate research practicum. *Journal of Professional Nursing*, 11(3), 154-160.
- Cook, M. J., & Leathard, H. L. (2004). Learning from clinical leadership. *Nursing Management*, 12(6), 436.

- Courtney, R. (1996). Nurses' role in primary care: Providing leadership for health care reform. In K. C. Kelly & M. Maas (Eds.), *Outcomes of effective management practice*. Thousand Oaks, California: Sage Publications.
- Cullum, N., & Sheldon, T. (1996). Clinically challenged. *Nursing Management*, 3(4), 14-16.
- Davidson, P., Elliott, D., & Daly, J. (2006). Clinical leadership in contemporary clinical practice: Implications for nursing in Australia. *Journal of Nursing Management*, 14(3), 180.
- Dawson, S. (1997). Inhabiting different worlds: How can research relate to practice? *Quality in Health Care*, 6(4), 177-178.
- DeBourg, G. (2001). Evidence-based practice: Fad or functional paradigm. *Clinical Issues*, 12(4), 463-467.
- Dempsey, P. A., & Dempsey, A. D. (2000). *Using nursing research: Prices, critical evaluation and utilization*. Philadelphia: Lippincott.
- DeVellis, R. F. (2003). *Scale development: Theory and application* (2nd ed.). Thousand Oaks, CA: Sage.
- DeVon, H. A., Block, M. E., Moyle-Wright, P., Ernst, D. M., Hayden, S. J., Lazzara, D. J., et al. (2007). Clinical scholarship: A psychometric toolbox for testing validity and reliability. *Journal of Nursing Scholarship*, 39(2), 155-164.
- Diamond, M. L., Wenzel, R. G., & Nissan, G. R. (2006). Optimising migraine therapy evidence-based and patient-centred care. *Expert Review of Neurotherapeutics*, 6(6), 911-919.
- Dobrow, M. J., Goel, V., & Upshur, R. E. G. (2004). Evidence-based health policy: Context and utilization. *Social Science and Medicine*, 58(1), 207-217.
- Donte, K., Corser, W., Kreulen, G., & Teitelman, A. (2004). A unique set of interactions: The Michigan State University sustained partnership model of nurse practitioner primary care. *Journal of the American Academy of Nurse Practitioner* 16(2), 60-63.

- Dopson, S., Locock, L., Gabbay, J., Ferlie, E., & Fitzgerald, L. (2003). Evidence-based medicine and the implementation gap. *Health* 7(3), 311-330.
- Doran, D. M., & Sidani, S. (2007). Outcomes-focused knowledge translation: A framework for knowledge translation and patient outcomes improvement. *Worldwideviews on Evidence-Based Nursing*, 4(1), 3-13.
- Dowling, M. (2000). Nurses' perceptions of the clinical nurse specialist (CNS) role. *Nursing Review Ireland*, 17(4), 96-99.
- Dufault, M. A., & Sullivan, M. (2000). A collaborative research utilization approach to evaluate the effects of pain management standards on patient outcomes. *Journal of Professional Nursing*, 16(4), 240-250.
- Dumas, J. A., Dietz, E. O., & Connolly, P. M. (2001). Nurse practitioner use of computer technologies in practice. *Computers in Nursing*, 19(1), 34-40.
- Dyer, K. A., & Thompson, C. D. (2001). Medical Internet ethics: A field in evolution. *Medinfo*, 84(10), 1287-1291.
- Dyson, J. (1997). Research: Promoting positive attitudes through education. *Journal of Advanced Nursing*, 26(3), 608-612.
- Egerod, I., & Hansen, G. M. (2005). Evidence-based practice among Danish cardiac nurses: A national survey. *Journal of Advanced Nursing*, 51(5), 465-473.
- Ehrenfeld, M., & Eckerling, S. (1991). Perceptions and attitudes of registered nurses to research: A comparison with a previous study. *Journal of Advanced Nursing*, 16(2), 224-232.
- Estabrooks, C. A. (1999a). The conceptual structures of research utilization. *Research in Nursing and Health*, 22(3), 203-216.
- Estabrooks, C. A. (1999b). Mapping the research utilization field in nursing. *Canadian Journal of Nursing Research*, 31(1), 53-72.
- Estabrooks, C. A. (2003). Translating research into practice: Implications for organizations and administrators. *Clinical Journal of Nursing* 35(3), 53-68.

- Estabrooks, C. A., Leary, K. A. O., Ricker, K. L., & Humphrey, C. K. (2003a). The Internet and access to evidence: How are nurses positioned? *Nursing and Health Care Management Issues*, 42(1), 73-81.
- Estabrooks, C. A., Floyd, J. A., Scott-Findlay, S., Leary, K. A. O., & Gushta, M. (2003b). Individual determinants of research utilization: A Systematic review. *Journal of Advanced Nursing*, 43(5), 506-520.
- Estabrooks, C. A., Rutakumwa, W., O'Leary, K. A., Profetto-McGrath, J., Milner, M., Levers, M. J., et al. (2005). Sources of practice knowledge among nurses. *Qualitative Health Research*, 15(4), 460-476.
- Fawcett, J., Watson, J., Neuman, B., Walker, P. H., & Fitzpatrick, J. J. (2001). On nursing theories and evidence. *Journal of Nursing Scholarship*, 33(2), 115-119.
- Ferlie, E., Wood, M., & Fitzgerald, L. (1999). Some limits to evidence-based medicine: A case study for elective orthopaedics. *Quality in Health Care*, 8, 99-107.
- Filkins, J. (2003). Nurse directors' jobs. A European perspective. *Journal of Nursing Management*, 11(1), 44-47.
- Finch, J. (2003). Commentary: A look at the bigger picture in building research capacity. *Nursing Times Research*, 8(6), 427-428.
- Fink, R., Thompson, C. J., & Bonnes, D. (2005). Overcoming barriers and promoting the use of research in practice. *Journal of Nursing Administration*, 35(3), 121-129.
- Fitzimons, D., McCance, T., & Armstrong, N. (2006). Vision, leadership and partnership: How to enhance the nursing and midwifery contribution to research and development. *Journal of Advanced Nursing*, 55(6), 748-756.
- Frasure, J. (2008). Analysis of instruments measuring nurses' attitudes towards research utilization: A systematic review. *Journal of Advanced Nursing*, 61(1), 5-18.
- French, B. (2005). Contextual factors influencing research use in nursing. *Worldwideviews on Evidence-Based Nursing*, 2(4), 172-183.

- French, P. (1999). The development of evidence-based nursing. *Journal of Advanced Nursing*, 29(1), 72-78.
- French, P. (2000). Evidence-based nursing: A changed dynamic in a managed care system. *Journal of Nursing Management* 8(3), 141-147.
- French, P. (2002). What is the evidence on evidence-based practice? An epistemological concern. *Journal of Advanced Nursing*, 37(3), 250-257.
- Funk, S. G., Champagne, M. T., Wiese, R. A., & Tornquist, E. M. (1991). The barriers to research utilization scale. *Applied Nursing Research*, 4(1), 39-45.
- Funk, S. G., Tornquist, E. M., & Champagne, M. T. (1995). Barriers and facilitators of research utilization: An integrative review. *Nursing Clinics of North America*, 30(3), 395-407.
- Gage, J. D., & Hornblow, A. R. (2007). Development of the New Zealand nursing workforce: Historical themes and current challenges. *Nursing Inquiry*, 14(4), 330-334.
- Gennaro, S., Hodnett, E., & Kearney, M. (2001). Making evidence-based practice a reality in your institution: Evaluating the evidence and using the evidence to change practice. *American Journal of Maternal/Child Nursing*, 26(5), 236-244.
- Gerrish, K., Ashworth, P., Lacey, A., & Bailey, J. (2008). Developing evidence-based practice: Experiences of senior and junior clinical nurses. *Journal of Advanced Nursing*, 62(1), 62-73.
- Gerrish, K., Ashworth, P., Lacey, A., Bailey, J., & Cooke, J. (2007). Factors influencing the development of evidence-based practice: A research tool. *Journal of Advanced Nursing*, 57(3), 328-338.
- Gerrish, K., & Clayton, J. (2004). Promoting evidence-based practice: An organizational approach *Journal of Nursing Management*, 12(2), 114-123.
- Gilmour, J. A., Scott, S. D., & Huntington, N. (2008). Nurses and Internet health information: A questionnaire survey. *Journal of Advanced Nursing*, 61(1), 19-28.

- Glacken, M., & Chaney, D. (2004). Perceived barriers and facilitators to implementing research findings in the Irish practice setting. *Journal of Clinical Nursing, 13*(6), 731-740.
- Goode, C. J., Lovette, M. K., Hayes, J. E., & Butcher, L. A. (1987). Use of research based knowledge in clinical practice. *Journal of Nursing Administration, 17*(12), 11-18.
- Gosling, A. S., Westbrook, J. I., & Spencer, R. (2004). Nurses' use of online clinical evidence. *Journal of Advanced Nursing, 47*(2), 201-211.
- Greenhalgh, T., & Douglas, H. R. (1999). Experiences of general practitioners and practice nurses of training courses in evidence-based health care: A qualitative study. *British Journal of General Practice, 49*(444), 536-540(5).
- Grimshaw, J. M., Eccles, M., & Tetroe, J. (2004). Implementing clinical guidelines: Current evidence and future implications. *Journal of Continuing Education in the Health Professions, 24*(1), 31-37.
- Grol, R. (2001). Successes and failures in the implementation of evidence-based guidelines for clinical practice. *Medical Care, 39*(8), 1146-1154.
- Haack, S. (2003). *Defending science- within reason*. New York: Prometheus Books.
- Halcomb, E. J., Patterson, E., & Davidson, P. M. (2006). Evolution of practice nursing in Australia. *Journal of Advanced Nursing, 55*(3), 376-388.
- Hannes, K., Vandersmissen, J., Blaeser, L. D., Peeters, G., Goedhuys, J., & Aertgeerts, B. (2007). Barriers to evidence-based nursing: A focus group study. *Journal of Advanced Nursing, 60*(2), 162-171.
- Hardey, M. (2001). The story of my illness: Personal accounts of illness on the Internet. *Health, 6*(1), 31-46.
- Harrison, L. (1998). Clinical guidelines and protocols in ICU. *Care of the Critically Ill, 14*, 155-159.

- Harvey, G., Loftus-Hills, A., Rycroft-Malone, J., Titchen, A., Kitson, A., McCormack, B., et al. (2002). Getting evidence into practice: The role and function of facilitation. *Journal of Advanced Nursing*, 37(6), 577-588.
- Haste, F. H., & MacDonald, L. D. (1992). The role of the specialist in community nursing: Perceptions of specialists and district nurses. *International Journal of Nursing Practice*, 29(1), 37-47.
- Hatcher, S., & Tranmer, J. (1997). A survey of variables related to research utilization in nursing practice in the acute care setting. *Canadian Journal of Nursing Administration*, 10(3), 31-53.
- Hegney, D., & McCarthy, A. (2000). Job satisfaction and nurses in rural Australia. *Journal of Nursing Administration*, 30(7/8), 347-350.
- Henderson, A., Winch, S., Hennney, R., McCoy, R., & Grugan, C. (2005). Working from the inside: An infrastructure for the continuing development of nurses' professional practice. *Journal of Nursing Management*, 13(2), 106-110.
- Hicks, C. (1993). A survey of midwives' attitudes to, and involvement in, research: The first stage in identifying needs for a staff development programme *Midwifery*, 9(2), 51-62.
- Hicks, C. (1995). The shortfall in publishing research: A study of nurses' research and publication activities. *Journal of Advanced Nursing*, 21(3), 594-604.
- Hicks, C. (1996). A study of nurses' attitudes toward research: A factor analysis report. *Journal of Advanced Nursing*, 23(2), 373-379.
- Hicks, C., & Hennessy, D. (1997). Mixed messages in nursing research: Their contribution to the persisting hiatus between evidence and practice. *Journal of Advanced Nursing*, 25, 595-601.
- Hirji, J. (2004). Freedom or folly? Canadians and the consumption of online health information *Information Communication and Society*, 7(4), 445-465.

- Hitchcock, B. W., & Murphy, E. (1999). A triad of research roles: Experiential learning in an undergraduate research role. *Journal of Nursing Education, 38*(3), 120-127.
- Holzemer, W., & Tierney, A. (1996). How nursing research makes a difference. *International Nursing Review, 43*(2), 49-58.
- Hutchinson, M., & Johnston, L. (2004). Bridging the divide: A survey of nurses' opinions regarding barriers to, and facilitators of, research utilization in the practice setting. *Journal of Clinical Nursing, 13*(3), 304-315.
- Jadad, A. R. (1999). Promoting partnership: Challenges for the Internet age. *British Medical Journal, 319*, 761-764.
- Jadad, A. R., & Gagliardi, A. (1998). Rating health information on the Internet: Navigating to knowledge or to Babel? *Journal of the American Medical Association, 279*(8), 611-614.
- Jadad, A. R., Sigouin, C., Cocking, L., Booker, L., Whelan, T., & Browman, G. (2001). Internet use among physicians, nurses and their patients. *Journal of American Medical Association, 286*(12), 1451-1452.
- Janes, R., Arroll, B., Bueto, S., Coster, G., McCormick, R., & Hague, I. (2004). Many North Island rural general practitioners appear not to use Internet websites as a frequent source of health information. *New Zealand Family Practitioner, 31*(4), 239-244.
- Jennings, B. M., & Loan, L. (2001). Misconceptions among nurses about evidence-based practice. *Journal of Nursing Scholarship, 33*(2), 121-127.
- Johnstone, G., Crombie, I. K., Davies, H. T. O., Alder, E. M., & Millard, A. (2000). Reviewing audit: Barriers and facilitation factors for effective clinical audit. *Quality in Health Care, 9*, 23-36.
- Jordan, S., & Segrott, J. (2008). Evidence-based practice: The debate. *Journal of Nursing Management, 16*(4), 385-387.

- Jutel, A. (2008). Beyond evidence-based practice: Tools for practice. *Journal of Nursing Management, 16*(4), 417-421.
- Kajermo, K., Nordstrom, G., Krusebrant, A., & Bjorvell, H. (1998). Barriers to and facilitators of research utilization, as perceived by a group of registered nurses in Sweden. *Journal of Advanced Nursing, 27*(4), 798-807.
- Kajermo, K., Nordstrom, G., Krusebrant, A., & Bjorvell, H. (2000). Perceptions of research utilization: Comparisons between healthcare professionals, nursing students and a reference group of nurse clinicians. *Journal of Advanced Nursing, 31*(1), 99-109.
- Kalichman, S. C., Bentosch, E. G., Weinhardt, L. S., Austin, J., & Luke, W. (2002). Internet use among people living with HIV/AIDS. *Aids Education Preview, 14*(1), 51-61.
- Karkos, B., & Peters, K. (2006). A magnet community hospital: Fewer barriers to nursing research utilization. *Journal of Nursing Administration, 36*(78), 377-382.
- Kendall, S. (1997). What do we mean by evidence? Implications for primary health care nursing. *Journal of Interprofessional Care, 11*(1), 23-34.
- Kenny, A., & Duckett, S. (2003). Educating for rural nursing practice. *Journal of Advanced Nursing, 44*(6), 613-622.
- King, A. (2004). *Opening address*. Paper presented at the College of Nurses Aotearoa Annual Conference, Christchurch.
- King, M., & Bruner, G. (2000). Social desirability bias: A neglected aspect of validity testing. *Psychology and Marketing, 17*(2), 79-103.
- Kitson, A. (2001). Approaches used to implement research findings into nursing practice: Report of a study tour to Australia and New Zealand. *International Journal of Nursing Practice, 7*(6), 392.
- Kitson, A. (2002). Recognising relationships: Reflection on evidence-based practice. *Nursing Enquiry, 9*(3), 179-186.

- Kitson, A., Ahmed, L. D., Harvey, G., Seers, K., & Thompson, D. R. (1996). From research to practice: One organizational model for promoting research based practice *Journal of Advanced Nursing*, 23(3), 430-440.
- Kitson, A., Harvey, G., & McCormack, B. (1998). Enabling the implementation of evidence-based practice: A conceptual framework. *Quality in Health Care*, 7(3), 149-158.
- Koehn, M. L., & Lehman, K. (2008). Nurses' perceptions of evidence-based nursing practice. *Journal of Advanced Nursing*, 62(2), 209-215.
- Kuuppelomaki, M., & Tuomi, J. (2005). Finnish nurses' attitudes towards nursing research and related factors. *International Journal of Nursing Studies*, 42(2), 187-196.
- Lacey, E. A. (1994). Research utilization in nursing practice: A pilot study. *Journal of Advanced Nursing*, 19(5), 987-995.
- Lakeman, R. (1998). The Internet: Facilitating an international nursing culture for psychiatric nurses. *Computers in Nursing*, 16(2), 87-89.
- Light, D. (2001). Managed competition, governmentality, and institutional responses in the United Kingdom. *Social Science and Medicine*, 52(8), 1167-1181.
- Liu, J., Pothiban, L., Lu, Z., & Khamphonsiri, T. (2000). Computer knowledge, attitudes, and skills of nurses in People's Hospital of Beijing Medical University. *Computers in Nursing*, 18(4), 197-206.
- Loader, B. D., Muncer, S., Burrows, R., Pleace, N., & Nettleton, S. (2002). Medicine on the line ? Computer mediated social support and advice for people with diabetes. *International Journal of Social Welfare*, 11(1), 53-65.
- LoBiondo-Wood, G., & Haber, J. (1998). *Nursing research: Methods, critical appraisal and utilization* (5th ed.). USA: Mosby.
- Mantzoukas, S. (2008). A review of evidence-based practice, nursing research and reflection: Levelling the hierarchy. *Journal of Clinical Nursing*, 17(2), 214-223.

- Marchionni, C., & Ritchie, J. (2008). Organizational factors that support the implementation of a nursing Best Practice Guideline. *Journal of Nursing Management, 16*(3), 266-274.
- Mason, C., Orr, J., Harrison, S., & Moore, R. (1999). Health professionals' perspective on service delivery in two Northern Ireland communities. *Journal of Advanced Nursing, 30*(4), 827.
- May, L. (2005). The development of the role of the nurse consultant in paediatric neurosurgery. *British Journal of Neuroscience Nursing, 1*(5), 243-248.
- Mayer, J., & Piterman, L. (1999). The attitudes of Australian GPs to evidence-based medicine: A focus group study. *Family Practice, 16*(6), 627-632.
- McCance, T. V., Fitzsimons, D., Kenney, S., Hasson, F., & McKenna, H. P. (2007). Capacity building in nursing and midwifery research and development: An old priority with a new perspective. *Journal of Advanced Nursing, 59*(1), 57-67.
- McCaughan, D., Thompson, C., Nicky, C., Cullum, N., Sheldon, T. A., & Thompson, D. R. (2002). Acute care nurses' perceptions of barriers to using research information in clinical decision-making. *Journal of Advanced Nursing, 39*(1), 46-60.
- McCleary, L., & Brown, G. (2003). Association between nurses' education about research and their research use. *Nurse Education Today, 23*(8), 556-565.
- McCloskey, D. J. (2008). Nurses' perception of research utilization in a corporate health care system. *Journal of Nursing Scholarship, 40*(1), 39-45.
- McColl, A., Smith, H., White, P., & Field, J. (1998). General practitioners' perceptions of the route to evidence-based medicine: A questionnaire survey [Electronic Version]. *British Medical Journal, 316*, 361-365. Retrieved March 1, 2008.
- McCormack, B., Kitson, A., Harvey, G., Rycroft-Malone, J., Titchen, A., & Seers, K. (2002). Getting evidence into practice: The meaning of context. *Journal of Advanced Nursing, 38*(1), 94-104.

- McCormack, B., Manley, K., Kitson, A., Titchen, A., & Harvey, G. (1999). Towards practice development-A vision in reality or a reality without vision? *Journal of Nursing Management*, 7(5), 255-264.
- McKenna, H. P., Ashton, S., & Keeny, S. (2004). Barriers to evidence-based practice in primary care. *Journal of Advanced Nursing*, 45(2), 178-189.
- McKenna, H. P., & Mason, C. (1998). Nursing and the wider R & D agenda: Influences and contributions. *Nursing Times Research*, 3(2), 108-115.
- McKnight, M. (2006). The information seeking of on-duty critical care nurses: Evidence from participant observation and in-context interviews. *Journal of the Medical Library Association*, 94(2), 145-151.
- McMurray, A. (1998). *Community health and wellness: A sociological approach*. Sydney: Mosby.
- McSherry, R. (1997). What do registered nurses and midwives feel and know about research? *Journal of Advanced Nursing*, 25(5), 985-998.
- McSherry, R., Artley, A., & Holloran, J. (2006). Research awareness: An important factor for evidence-based practice? *Worldwideviews on Evidence-Based Nursing*, 3(3), 103-115.
- Meah, S., Luker, K. A., & Cullum, N. A. (1996). An exploration of midwives attitudes to research and perceived barriers to research utilization. *Midwifery*, 12(2), 73-84.
- Meijers, J. M. M., Janssen, M. A. P., Cummings, G. G., Wallin, L., Eastbrooks, C. A., & Halfens, R. Y. G. (2006). Assessing the relationship between contextual factors and research utilization: A systematic literature review. *Journal of Advanced Nursing*, 55(5), 622-635.
- Melnyk, B. M., Fineout-Overholt, E., Feinstein, N. F., Li, H., Small, L., Wilcox, L., et al. (2004). Nurses' perceived knowledge, beliefs, skills, and needs regarding evidence-based practice: Implications for accelerating the paradigm shift. *Worldwideviews on evidence-based nursing*, 1(3), 185-193.

- Michel, Y., & Sneed, N. V. (1995). Dissemination and use of research findings in nursing practice. *Journal of Professional Nursing, 11*, 306-311.
- Minichiello, V., Sullivan, G., Greenwood, K., & Axford, R. (1999). *Handbook for research methods*. Sydney: Addison-Wesley.
- Minichiello, V., Sullivan, G., Greenwood, K., & Axford, R. (2004). *Research methods for nursing and health science* (2nd ed.). Sydney Australia: Prentice Hall.
- Ministry of Health. (2000). *Health needs assessments for New Zealanders: Background paper and literature review*. Wellington: Author.
- Ministry of Health. (2001a). *Intersectoral initiatives for improving the health of local communities: A literature review*. Wellington: Author.
- Ministry of Health. (2001b). *The primary health care strategy*. Wellington: Author.
- Mitchell, P. H. (2006). Research and development in nursing revisited: Nursing science as the basis for evidence-based practice. *Journal of Advanced Nursing, 54*(5), 528-529.
- Munro, B. H. (2005). *Statistical methods for health care research* (4th ed.). Philadelphia: Lippincott, Williams & Wilkins.
- Myles, P. S., & Gin, T. (2000). *Statistical methods for anaesthesia and intensive care*. Oxford: Butterworth Heinemann.
- Nagy, S., Lumby, J., McKinley, S., & Macfarlane, C. (2001). Nurses' beliefs about the conditions that hinder or support evidence-based nursing. *International Journal of Nursing Practice, 7*(5), 314-321.
- Nardi, P. M. (2003). *Doing survey research*. Boston: Pearson Education.
- Nettleton, S., Burrows, R., & Malley, L. O. (2005). The mundane realities of the everyday lay use of the internet for health, and their consequences for media governance. *Sociology of Health and Illness, 27*(7), 972-992.
- Newman, M., Papadopoulos, I., & Sigsworth, J. (1998). Barriers to evidence-based practice. *Intensive & Critical Care Nursing, 14*(5), 231-238.

- New Zealand Health Information Service. (2004). New Zealand Workforce Statistics 2004: Nurses and Midwives Retrieved January 4, 2008, from <http://www.nzhis.govt.nz/stats/nursesstats.html>.
- Nilsson, K., Kajermo, K., Nordstrom, G., Krusebrant, A., & Bjorvell, H. (2002). Barriers to and facilitators of research utilization by a group of registered nurses in Sweden. *Journal of Advanced Nursing*, 27(4), 798-807.
- Nolan, M., Morgan, L., Curran, M., Clayton, J., Gerrish, K., & Parker, K. (1998). Evidence-based care: Can we overcome the barriers? *British Journal of Nursing*, 7(20), 1273-1278.
- Nolan, P., & Bradley, E. (2008). Evidence-based practice: Implications and concerns. *Journal of Nursing Management*, 16(4), 388-393.
- Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). New York: McGraw-Hill.
- Nursing Council of New Zealand. (2007). Competencies for registered nurses. Retrieved March 12, 2008, from <http://www.nursingcouncil.org.nz/RN%20Comps%20final.pdf>.
- Nutley, S. M., & Davies, H. T. O. (2001). Developing organizational learning in the NHS. *Medical Education*, 35(1), 35-42.
- O'Donnell, C. (2004). Attitudes and knowledge of primary care professionals toward evidence-based practice: A postal survey. *Journal of Evaluation in Clinical Practice*, 10(2), 197-205.
- O'Rourke, T. W. (2000). Techniques for screening and cleaning data for analysis [Electronic Version]. *American Journal for Health Studies*. Retrieved 3 June 2008, from <http://ajhs.tamu.edu/18-23/O'Rourke.pdf>
- Oermann, M. H., Floyd, J. A., Galvin, E. A., & Roop, J. C. (2006). Brief reports for disseminating systematic reviews to nurses. *Clinical Nurse Specialist*, 20(5), 233-238.

- Oermann, M. H., Nordstrom, C. K., Wilmes, N. A., Denison, D., Webb, S. A., Featherston, D. E., et al. (2008). Dissemination of research in clinical nursing journals. *Journal of Clinical Nursing, 17*(2), 149-156.
- Olade, R. A. (2003). Attitudes and factors affecting research utilization. *Nursing Forum, 38*(4), 6-15.
- Olade, R. A. (2004). Evidence-based practice and research utilization activities among rural nurses. *Journal of Nursing Scholarship, 36*(3), 220-225.
- Oranta, O., Routasalo, P., & Hupli, M. (2002). Barriers to and facilitators of research utilization among Finnish registered nurses. *Journal of Clinical Nursing, 11*(2), 205-213.
- Pain, K., Magill-Evans, J., Darrah, J., Hagler, P., & Warren, S. (2004). Effects of profession and facility type on research utilization by rehabilitation professionals. *Journal of Allied Health, 33*(1), 3-9.
- Paley, J. (2006). Evidence and expertise. *Nursing Enquiry, 13*(2), 82-93.
- Parahoo, K. (1998). Research utilization and research related activities of nurses in Northern Ireland. *International Journal of Nursing Studies, 35*(5), 283-291.
- Parahoo, K. (2000). Barriers to, and facilitators of, research utilization among nurses in Northern Ireland. *Journal of Advanced Nursing, 31*(1), 89-98.
- Parahoo, K., & McCaughan, E. M. (2001). Research utilisation among medical and surgical nurses: A comparison of their self reports and perceptions of barriers and facilitators. *Journal of Nursing Management, 9*(1), 21-30.
- Pearcy, P. A. (1995). Achieving research-based nursing practice. *Journal of Advanced Nursing, 22*(1), 33-39.
- Ploeg, J., Davies, B., Edwards, N., Gifford, W., & Miller, P. E. (2007). Factors influencing best-practice guideline implementation: Lessons learned from administrators, nursing staff, and project leaders. *Worldwideviews on Evidence-Based Nursing, 4*(4), 210-219.

- Polit, D. F., & Beck, C. T. (2004). *Nursing research: Principles and methods*. Philadelphia: Lippincott Williams & Wilkinson.
- Polit, D. F., & Beck, C. T. (2008). *Nursing research: Generating and assessing the evidence for nursing practice* (8th ed.). Philadelphia: Lippincott Williams & Wilkinson.
- Polit, D. F., & Hungler, B. (1997). *Essentials of nursing research: Methods, appraisals and utilization* (4th ed.). Philadelphia: Lippincott.
- Pond, E. F., & Bradshaw, M. J. (1996). Attitudes of nursing students towards research: A participatory exercise. *Journal of Nursing Education*, 35(4), 182-185.
- Pravikoff, D. S., Tanner, A. B., & Pierce, S. T. (2005). Readiness of U.S. nurses for evidence-based practice. *American Journal of Nursing*, 105(9), 40-51.
- Retsas, A. (2000). Barriers to using research evidence in nursing practice. *Journal of Advanced Nursing*, 31(3), 599-606.
- Retsas, A., & Nolan, M. (1999). Barriers to nurses' use of research: An Australian hospital study. *International Journal of Nursing Studies*, 36(4), 335-343.
- Ring, N., Malcolm, C., Coull, A., Murphy-Black, T., & Watterson, A. (2005). Nursing best practice statements: An exploration of their implementation in clinical practice. *Journal of Clinical Nursing*, 14(9), 1048-1058.
- Risk, A., & Petersen, C. (2002). Health information on the internet: Quality issues and international initiatives. *Journal of the American Medical Association*, 287(20), 2713-2715.
- Rizzuto, C., Bostrom, J., Suter, W. N., & Chenitz, W. C. (1994). Predictors of nurses' involvement in research activity. *Western Journal of Nursing Research*, 16(2), 193-204.
- Robson, C. (2002). *Real world research: A resource for social scientists and practitioners*. Oxford: Blackwell.

- Rodgers, S. (2000a). The extent of nursing research utilization in general medical and surgical wards. *Journal of Advanced Nursing*, 32(1), 182-193.
- Rodgers, S. (2000b). A study of the utilization of research in practice and the influence of education. *Nurse Education Today*, 20(4), 279-287.
- Rogers, A., & Mead, N. (2004). More than technology and access: Primary care patients' views on the use and non-use of health information in the Internet age. *Health & Social Care in the Community*, 12(2), 102-110.
- Rogers, S. E. (2000). A study of the utilization of research in practice and the influence of education. *Nurse Education Today*, 20(4), 279-287.
- Rolfe, G. (1999). Insufficient evidence: The problems of evidence-based nursing. *Nurse Education Today*, 19(6), 433-442.
- Rolfe, G., Segrott, J., & Jordan, S. (2008). Tensions and contradictions in nurses' perspectives of evidence-based practice. *Journal of Nursing Management*, 16(4), 440-451.
- Roxburg, M. (2006). An exploration of factors which constrain nurses from research participation. *Journal of Clinical Nursing*, 15(5), 535-545.
- Royal College of Nursing. (2007). Clinical governance. Retrieved January 5, 2008, from http://www.rcn.org.uk/development/practice/clinical_governance.
- Royle, J., Blythe, J., DiCenso, A., Baumann, A., & Fitzgerald, D. (1997). Do nurses have the information resources and skills for research utilization? *Canadian Journal of Nursing Administration*, 10(3), 9-30.
- Royle, J., Blythe, J., DiCenso, A., Boblin-Cummings, S., Deber, R., & Hayward, R. (2000). Evaluation of a system for providing information resources to nurses. *Health Informatics*, 6(2), 100-109.
- Rycroft-Malone, J. (2004). The PARISH framework- a framework for guiding the implementation of evidence of evidence-based practice. *Journal of Nursing Care Quality*, 19(4), 297-304.

- Rycroft-Malone, J. (2006). The politics of evidence-based practice movements: Legacies and current challenges. *Journal of Research in Nursing, 11*(2), 95-108.
- Rycroft-Malone, J. (2008). Evidence-informed practice: From individual to context. *Journal of Nursing Management, 16*(4), 404-408.
- Rycroft-Malone, J., Harvey, G., Seers, K., Kitson, A., McCormack, B., & Titchen, A. (2004a). Issues in clinical nursing: An exploration of the factors that influence the implementation of evidence into practice. *Journal of Clinical Nursing, 13*(8), 913-924.
- Rycroft-Malone, J., Seers, K., Titchen, A., Harvey, G., Kitson, A., & McCormack, B. (2004b). What counts as evidence in evidence-based practice? *Journal of Advanced Nursing, 47*(1), 81-90.
- Rycroft-Malone, J., Kitson, A., Harvey, G., McCormack, B., Seers, K., & Titchen, A. (2002). Ingredients for change: Revisiting a conceptual framework. *Quality and Safety in Health Care, 11*(2), 174-180.
- Sackett, D. L., Rosenberg, W. M., Gray, J. A., Haynes, R. B., & Richardson, W. S. (1996). Evidence-based medicine: What is it and what is it not. *British Medical Journal, 312*(7023), 71-122.
- Sackett, D. L., Strauss, S. E., Richardson, W. S., Rosenberg, W., & Haynes, R. B. (2000). *Evidence-based medicine. How to practice and teach evidence-based medicine* (2nd ed.). Edinburgh: Churchill Livingstone.
- Schmidt, K., & Ernest, E. (2004). Assessing websites on complementary and alternative medicine for cancer. *Annals of Oncology, 15*(5), 733-742.
- Schuster, M. A., McGlynn, E. A., & Brook, R. H. (1998). How good is the quality of health care in the United States? *The Milbank Quarterly, 83*(4), 843-895.
- Scott-Findlay, S., & Pollock, C. (2004). Evidence, research, knowledge: A call for conceptual clarity. *Worldwideviews on Evidence-Based Nursing, 1*(2), 92-97.

- Segrott, J., McIvor, M., & Green, B. (2006). Challenges and strategies in developing nursing research capacity: A review of the literature. *Journal of Nursing Studies*, 43(5), 637-651.
- Sherriff, K. L., Wallis, M., & Chaboyer, W. (2007). Nurses' attitudes to and perceptions of knowledge and skills regarding evidence-based practice. *International Journal of Nursing Practice*, 13(6), 363-369.
- Sitzia, J. (2001). Barriers to research utilization: The clinical setting and nurses themselves. *Intensive and Critical Care Nursing*, 18(4), 230-243.
- Stetler, C. B. (2003). Role of organizations in translating research into evidence-based practice. *Outcomes Management*, 7(3), 97-129.
- Stetler, C. B., Brunell, M., Guillano, K. K., Morsi, D., Prince, L., & Newell-Stokes, V. (1998). Evidence-based practice and the role of nursing leadership. *Journal of Nursing Administration*, 28(7/8), 45-53.
- Stetler, C. B., Ritchie, J., Rycroft-Malone, J., Shultz, A., & Charns, M. (2007). Improving quality of care through routine, successful implementation of evidence-based practice at the bedside: An organizational case study protocol using the Pettigrew and Whipp model of strategic change [Electronic Version]. Retrieved January 12, 2008, from <http://www.implementationscience.com/content/2/1/3>.
- Swinglehurst, D. (2005). Information needs of United Kingdom primary care clinicians. *Health Information and Libraries Journal*, 22(3), 196-204.
- Tan, E. L., Stark, H., Lowinger, J. S., Ringland, C., Ward, R., & Pearsons, S.-A. (2006). Information sources used by New South Wales cancer clinicians: A qualitative study. *Internal Medicine Journal*, 36(11), 711-717.
- Thomas, P., & While, A. (2001). Increasing research capacity and changing the culture of primary care towards reflective nursing practice: The experience of the West London Research Network (WeLReN). *Journal of Interprofessional Care*, 15(2), 133-139.

- Thompson, C., McCaughan, D., Cullum, N., Sheldon, T., Mulhall, A., & Thompson, D. (2001). The accessibility of research-based knowledge for nurses in United Kingdom acute care settings. *Journal of Advanced Nursing*, 36(1), 11-22.
- Timmons, S., & Tredoux, T. (2000). The doctor -nurse computer game: Do established relationships of power influence the use of Information Technology in clinical practice? *Information Technology in Nursing*, 12, 3-7.
- Upton, D. (1999a). Attitudes towards, and knowledge of, clinical effectiveness in nurses, midwives, practice nurses and health visitors. *Journal of Advanced Nursing*, 29(4), 885-893.
- Upton, D. (1999b). How can we achieve evidence-based practice if we have a theory-practice gap in nursing today? *Journal of Advanced Nursing*, 29(3), 549-555.
- Upton, D., & Upton, P. (2005). Nurses' attitudes to evidence-based practice: Impact of a national policy. *British Journal of Nursing*, 14(5), 284-288.
- Upton, D., & Upton, P. (2006). Development of an evidence-based practice questionnaire for nurses. *Journal of Advanced Nursing*, 54(4), 454-458.
- Veeramah, V. (1995). A study to identify the attitudes and needs of qualified staff concerning the use of research findings in clinical practice within mental health care settings. *Journal of Advanced Nursing* 22(5), 855-861.
- Veeramah, V. (2004). Utilization of research findings by graduate nurses and midwives. *Journal of Advanced Nursing*, 47(2), 183-191.
- Waddell, C. (2002). So much research evidence, so little dissemination and uptake: Mixing the useful with the pleasing. *Evidence-Based Mental Health*, 4, 3-5.
- Waine, M., Magill-Evans, J., & Pain, K. (1997). Alberta occupational therapists' perspectives on and participation in research. *Canadian Journal of Occupational Therapy*, 64(2), 82-88.
- Wallin, L., Bostrom, A. M., Wikbald, K., & Ewald, U. (2003). Sustainability in changing clinical practice promotes evidence-based nursing care. *Journal of Advanced Nursing*, 41(5), 509-518.

- Walsh, M. (1997). Barriers to research utilisation and evidence-based practice in A&E nursing. *Emergency Nurse*, 5(2), 24-27.
- Waltz, C. F., Strickland, O. L., & Lenz, E. R. (2005). *Measurement in nursing and health research* (3rd ed.). New York: Springer.
- Winch, S., Henderson, A., & Creedy, D. (2005). Read, Think, Do!: A method for fitting research evidence into practice. *Journal of Advanced Nursing*, 50(1), 20-26.
- Wong, C. A., & Cummings, G. (2007). The relationship between nursing leadership and patient outcomes: A systematic review. *Journal of Nursing Management*, 15(5), 508-521.
- Wright, A., Brown, P., & Sloman, R. (1996). Nurses' perceptions of the value of nursing research for practice. *Australian Journal of Advanced Nursing*, 13(4), 15-18.
- Yates, P., Baker, D., Barret, L., Christie, L., Dewar, A. M., Middleton, R., et al. (2002). Cancer nursing research in Queensland, Australia: Barriers, priorities and strategies for progress. *Cancer Nursing*, 25(3), 167-180.
- Young, J. M., Glasziou, P., & Ward, J. E. (2002). General practitioners' self-rating of skills in evidence-based medicine: Validation study. *British Medical Journal*, 324(7343), 950-951.
- Young, J. M., & Ward, J. E. (2001). Evidence-based medicine in general practice: Beliefs and barriers among Australian GPs. *Journal of Evaluation in Clinical Practice*, 7(2), 201-210.



INFORMATION SHEET

Research Title:

Knowledge and use of evidence - based practice by primary health care nurses.

Introduction

My name is Patsy Prior; I am a registered nurse completing a Masters of Nursing at Massey University School of Health Sciences, Auckland. I work for Waitemata DHB as Team Leader/Public Health Nurse for the West Auckland Child and Family Service.

The aim of my research is to describe the level of knowledge and attitudes primary health care nurses have toward evidence-based practice.

Evidence-based practice is an approach to problem-solving in clinical practice which involves identifying the clinical problem, searching the literature, critically evaluating the research evidence and determining the intervention.

Participant Involvement:

I would like to invite you to take part in this research project. Participation in this research project will involve you completing an anonymous questionnaire. This should take approximately fifteen minutes to complete. The questionnaire seeks to explore the following areas of interest.

- Primary health care nurses attitude toward evidence-based practice.
- Practice of individual components of evidence-based practice.
- Knowledge and skills relevant to the implementation of evidence-based practice.
- The final section requests information on individual demographic details.

Participant Recruitment:

Practice nurses will be identified through a public website that lists Primary Health Care Organisations as well as through practice nurse managers and public health nurses.

Participants Rights:

- Your participation in this study is entirely voluntary.
- You do not have to answer all the questions.

- Completion and return of the questionnaire will be taken as consent.
- If you have any queries or concerns regarding your rights as a participant in this study, you may wish to contact your professional organisation.

Risks and Benefit

- There are no risks if you decide to take part in this research project.
- The results of the survey may be a starting point for developing and evaluating educational programmes for primary health care nurses.

Confidentiality:

- The questionnaire can be returned anonymously in the freepost envelopes provided.
- No material which could personally identify you will be used in any reports on this study.
- The returned questionnaires will be collated and stored in a locked cupboard and a password protected computer for the duration of the research.
- Data will be accessible by myself and my research supervisor at Massey University only.
- Following completion of the study data will be stored in a locked cupboard at Massey University for up to 5 years following which it will be destroyed by the supervisor or nominated and appropriate person (as identified by the University).

Results:

You have the right to receive information about the study and its results by contacting the researcher or her supervisor.

This study has received ethical approval from the Northern Regional Ethics Committee.

Please feel free to contact the researcher if you have any questions about this study.

Regards

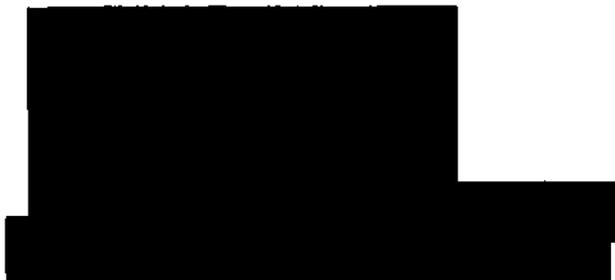
Patsy Prior

Researcher

Patsy Prior

Research Supervisor

Dr. Stephen Neville
 Massey University
 School of Health Sciences
 Private Bag 102 904
 North Shore Mail Centre
 Auckland
 Phone (09) 414 0800 ext.9065
S.J.Neville@massey.ac.nz



Clinical Effectiveness and Evidence Based Practice Questionnaire (EBPQ).

This questionnaire is designed to gather information and opinions on the use of evidence based practice amongst health professionals. There are no right or wrong answers for we are interested in *your* opinions and *your* own use of evidence in *your* practice.

1. Considering your practice in relation to an individual patient's care over the *past* year, how often have you done the following in response to a gap in your knowledge (please \surd or X):

Formulated a clearly answerable question as the beginning of the process towards filling this gap:
Never **Frequently**

Tracked down the relevant evidence once you have formulated the question:
Never **Frequently**

Critically appraised, against set criteria, any literature you have discovered:
Never **Frequently**

Integrated the evidence you have found with your expertise:
Never **Frequently**

Evaluated the outcomes of your practice:
Never **Frequently**

Shared this information with colleagues:
Never **Frequently**

2. Please indicate (by \surd or X) where on the scale you would place yourself for each of the following pairs of statements:

- | | | |
|--|---|---|
| My workload is too great for me to keep up to date with all the new evidence | <input type="checkbox"/> | New evidence is so important that I make the time in my work schedule |
| I resent having my clinical practice questioned | <input type="checkbox"/> | I welcome questions on my practice |
| Evidence based practice is a waste of time | <input type="checkbox"/> | Evidence based practice is fundamental to professional practice |
| I stick to tried and trusted methods rather than changing to anything new | <input type="checkbox"/> | My practice has changed because of evidence I have found |

3. On a scale of 1 to 7 (with 7 being the best) how would you rate your:

Please circle one number for each statement							
	Poor						Best
Research skills	1	2	3	4	5	6	7
IT skills	1	2	3	4	5	6	7
Monitoring and reviewing of practice skills	1	2	3	4	5	6	7
Converting your information needs into a research question	1	2	3	4	5	6	7
Awareness of major information types and sources	1	2	3	4	5	6	7
Ability to identify gaps in your professional practice	1	2	3	4	5	6	7
Knowledge of how to retrieve evidence	1	2	3	4	5	6	7
Ability to analyse critically evidence against set standards	1	2	3	4	5	6	7
Ability to determine how valid (close to the truth) the material is	1	2	3	4	5	6	7
Ability to determine how useful (clinically applicable) the material is	1	2	3	4	5	6	7
Ability to apply information to individual cases	1	2	3	4	5	6	7
Sharing of ideas and information with colleagues	1	2	3	4	5	6	7
Dissemination of new ideas about care to colleagues	1	2	3	4	5	6	7
Ability to review your own practice	1	2	3	4	5	6	7

Please use this space to write any comments you wish.

Please return your questionnaire in the Freepost envelope provided.

All information will be treated as confidential and will not be traceable to individuals.

DEMOGRAPHIC DATA

Are you Female or Male?

Female:

Male:

What is your age range? Please circle the most appropriate 20-29 30-39 40-49 50-59 60-69

With which ethnic group or groups do you most closely identify?

Other European	<input type="checkbox"/>	Tongan	<input type="checkbox"/>	South East Asian	<input type="checkbox"/>
NZ European	<input type="checkbox"/>	Niuean	<input type="checkbox"/>	Chinese	<input type="checkbox"/>
NZ Maori	<input type="checkbox"/>	Tokelauan	<input type="checkbox"/>	Indian	<input type="checkbox"/>
Samoan	<input type="checkbox"/>	Fijian	<input type="checkbox"/>	Other Asian	<input type="checkbox"/>
Cook Island Maori	<input type="checkbox"/>	Other Pacific	<input type="checkbox"/>	Other (Please specify)	<input type="checkbox"/>

What qualification(s) led to your registration in your current scope(s)?

BN	<input type="checkbox"/>	Dip N	<input type="checkbox"/>	Hospital Based training Certificate	<input type="checkbox"/>
BHS	<input type="checkbox"/>	Other (Please specify)	<input type="checkbox"/>		

What are your other completed tertiary qualifications?

PhD	<input type="checkbox"/>	MEd	<input type="checkbox"/>	PG Dip	<input type="checkbox"/>
MN	<input type="checkbox"/>	BN	<input type="checkbox"/>	PG Cert	<input type="checkbox"/>
MA	<input type="checkbox"/>	BMSc	<input type="checkbox"/>	Other (Please specify)	<input type="checkbox"/>
MA (Applied)	<input type="checkbox"/>	BA	<input type="checkbox"/>		

1. How long have you practiced as a registered nurse?

2. How long have you worked in Primary Health Care?

3. How many hours do you work in a typical week?

4. Do you read professional nursing journals that publish research articles?

(Please tick the box that is closest to your reading frequency)

At least once a week: At least every three months: No, never:

At least once a month: Less than every three months:

Thank you for taking time to fill this out.

Neville, Stephen

From: [REDACTED]
Sent: Thursday, 11 January 2007 12:00 a.m.
To: Neville, Stephen
Subject: EBPQ

Importance: High

Attachments: EBPQ final version.rtf



EBPQ final
version.rtf (97 KB)...

Dear Stephen,

Many thanks for your interest in the EBPQ. We are happy to provide you with a copy of this measure & permission to use it in your work, with the proviso that as authors we are acknowledged in any communication including publication, in which the questionnaire is used. In accordance with UK copyright law we would also be grateful if you would refer anyone else interested in using the EBPQ to us, rather than distribute copies of the questionnaires to third parties yourself. This will also help us gauge the level of interest in the questionnaire and its application in the clinical/research setting. Good luck with your research and please let me know if you require any further information.

<<EBPQ final version.rtf>>

Best wishes
Penney

Penney Upton

[REDACTED]



25 January 2007

Patsy Prior

Tena koe Patsy

Re: What is the Knowledge and use of evidence-based practice by primary health care nurses

This letter serves to confirm the draft receipt of your study aims and questionnaire following our meeting last Friday, 19 January at Mo Wai Te Ora Maori Health office. As discussed, your study would greatly benefit from an inclusion of gauging respective knowledge and educational needs of primary health care nurses in relation to also implementing evidence-based cultural practices into their routine client/patient management. This especially relates to the diverse ethnicity demographics of the wider West Auckland catchment of Waitemata DHB service area.

Given that you have obtained permission to use the EBPQ template, an additional set of scale questions specific to your purposes should not be problematic to include. Also please include an ethnicity section in Box Question 4. This gives your study capacity to acknowledge that cultural backgrounds may also influence participants opinions and practices. This is extremely relevant for the primary health care nurses sector who see families in the community setting.

While I agree with your Massey University supervisor on the non-Regional Ethics applicability, I have tentatively placed your study on the agenda of the Nga Kai Tataki **16 February 2007** meeting. This will allow us to meet should you receive a confirmation to the contrary. As a former Massey University Human Ethics, I do encourage you to experience the full process at some stage of your professional development however I do note the time constraints you have in relation to your thesis preparations.

In closing, I would hope that your supervisor concurs with my suggestions. The final decision to amend the EBPQ depends on the research capacity of your study. I wish your study well and would value a copy of your decision to include and/or a copy of your study findings. Should you have any queries, feel free to contact me in the first instance (021) 574 045.

Ma te wa, ra

4 September 2007

Ms Patsy Prior

Dear Patsy

NTX/07/86/EXP What is the knowledge and use of evidence-based practice by primary health care nurses?

Principal Investigator: Ms Patsy Prior

Supervisor: Dr Stephen Neville

Thank you for your application received 27 August 2007. The above study has been given ethical approval by the Deputy Chairperson of the **Northern X Regional Ethics Committee** under delegated authority.

Approved Documents

- Questionnaire
- Protocol (received 27/08/07)
- Information Sheet (received 27/08/07)

Please insert a footer with version number and date on the questionnaire and Information Sheet.

Accreditation

The Committee involved in the approval of this study is accredited by the Health Research Council and is constituted and operates in accordance with the Operational Standard for Ethics Committees, April 2006.

Progress Reports

The study is approved until 4 September 2008. However, the Committee will review the approved application annually and notify the Principal Investigator if it withdraws approval. It is the Principal Investigator's responsibility to forward a progress report covering all sites prior to ethical review of the project on **4 September 2008**. The report form is available on <http://www.newhealth.govt.nz/ethicscommittees> (progress/final reports). Please note that failure to provide a progress report may result in the withdrawal of ethical approval.

A final report is also required at the conclusion of the study.

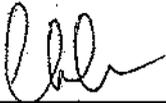
Amendments

It is also a condition of approval that the Committee is advised of any adverse events, if the study does not commence, or the study is altered in any way, including all documentation eg advertisements, letters to prospective participants.

Please quote the above ethics committee reference number in all correspondence.

It should be noted that Ethics Committee approval does not imply any resource commitment or administrative facilitation by any healthcare provider within whose facility the research is to be carried out. Where applicable, authority for this must be obtained separately from the appropriate manager within the organisation.

Yours sincerely



**Assistant Administrator
Northern X Regional Ethics Committee**

