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**BARRIERS TO AND FACILITATORS OF RESEARCH USE  
IN CLINICAL PRACTICE FOR A SAMPLE OF  
NEW ZEALAND REGISTERED NURSES**

A thesis presented in partial fulfilment of the requirements for the degree of  
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## Abstract

The professionalisation of nursing has created much debate about nursing research and research utilisation in clinical nursing practice. Clarke (1999) has commented that research on research utilisation is a whole new field worthy of further exploration. An early study in the field identified a considerable lack of integration and application of research findings in clinical practice (Ketefian, 1975).

Research utilisation is a complex process with many varied influencing factors. Funk, Champagne, Wiese and Tornquist (1991a) developed a research tool, the BARRIER scale, to assess barriers to and facilitators for the use of research that covers factors within four major sub scales, i.e. factors on the level of the individual nurse, of the organisation, the research, and the way of communicating research results. This tool is based on Rogers' (1995) framework of the diffusion of innovation. The present study is a replication study using the BARRIER scale to assess barriers to and facilitators of research use in clinical practice in a New Zealand sample of registered nurses and midwives.

The data for the study was collected from 164 registered nurses and midwives working in the Inpatient wards of a tertiary teaching hospital. Data analysis was performed with the Statistical Software Package for Social Sciences (SPSS), including descriptive statistics, item ranking, group comparisons and factor analysis. Two open ended questions on additional barriers and facilitators were analysed for their thematic content and in relation to the BARRIER sub scales.

Findings are discussed in relation to the theoretical framework and against the literature. Overall, this sample perceived the organisational and research items as the biggest barriers to registered nurses' use of research. Time was the most often stated barrier to and facilitator of research use. The item ranking of this sample is compared with international results. The research tool is evaluated for its psychometric value and scope of development. Finally, the general limitations of the study are outlined and implications for future research are discussed.

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## Glossary of Abbreviations

AND	Advanced Nursing Diploma
AT & R	Assessment, Treatment and Rehabilitation Unit
BM	Bachelor of Midwifery
BN	Bachelor of Nursing
CCU	Cardiac Care Unit
CNS	Clinical Nurse Specialist
DHB	District Health Board
EBM	Evidence Based Medicine
EBN	Evidence Based Nursing
EN	Enrolled Nurse
ENB	English National Board (UK accreditation body for further nursing education)
FTE	Full Time Equivalent
ICU	Intensive Care Unit
NNU	Neonatal Unit
RM	Registered Midwife
RN	Registered Nurse
RPN	Registered Psychiatric Nurse



## Chapter 1:

### Introduction and Overview

#### 1. 1. Introduction

The professionalisation of nursing has created much debate about research and research utilisation in clinical nursing practice. Fawcett (1980) has stated that nursing professionalism depends on research and the implementation of research findings into clinical practice. Furthermore, it has been argued that research has to be part of every nurse's daily thinking and activity in order to make the desired impact in clinical practice (Evans, 1980). The recent move toward evidence-based practice, which seem to support the call for a research based nursing profession, could also contribute to increased authority and autonomy for nurses (Bonell,1999). However, there is substantial debate as to what should constitute nursing research (Ford-Gilboe, Champbell & Berman, 1995; Greenwood, 1984; Hicks & Hennessy, 1997). A similar debate is held around a definition for evidence based nursing practice (Closs & Cheater, 1999) and what is needed for an evidence base for nursing (Kitson, 1999). It is not surprising that research utilisation, essential to nursing practice, is an issue of considerable concern within today's nursing.

Champagne, Tornquist and Funk (1997) see three main benefits of research use: (1) to increase in the understanding of the patient's situation, (2) more accurate assessment and (3) more effective nursing intervention. Similarly, Crane (1995) contends that research utilisation is not an ultimate goal in itself, but a means to an end in the delivery of high quality, cost-effective care in order to achieve desirable patient outcomes. However, research utilisation is a complex endeavour with multiple influencing factors. In fact, Clarke (1999) comments that 'research on research utilisation' is a whole new research field worthy of further exploration in nursing.

An early study in the field of research utilisation identified the lack of integration and application of research findings in clinical practice (Ketefian, 1975). More recently, inquiries into the underlying factors that shed light on the dynamics of the deficits in research utilisation and give support to the development of research utilisation strategies were advanced (Champion & Leach, 1989; Funk, Champagne, Wiese & Tornquist, 1991a, 1991b; Horsley, Crane & Bingle, 1978; Hunt, 1987; Jones, 2000; Michel & Sneed, 1995; Wilson-Barnett, Corner & De Carle, 1990).

These international concerns and efforts to analyse and address research and research utilisation within the nursing profession have also been influential on the development of nursing research in New Zealand. However, being a country with its unique context and historical development, some effort has to be made towards inquiry that takes into account characteristics specific to New Zealand, and which highlights the differences that might exist.

## **1. 2. Background**

New Zealand nursing is faced with similar issues regarding research and its utilisation practice as is the case internationally. In the century since the first nurse has been registered in New Zealand, nursing has evolved here as a distinct professional discipline. Engaging initially in research through involvement in medical research from the 1930s, nurses developed their own research interests. This development has been supported and expanded by the shift that took place in nursing education that saw the move from hospital based training to academic education in the tertiary sector (Wood, 2001).

Although the current preparation of nurses and midwives at tertiary institutions includes education in research, the nursing/midwifery work force is still dominated by professionals without adequate research education in their pre registration preparation. The Nursing Council of New Zealand (2000a) reports that only 7% of 31,739 professionals applying for

their annual practicing certificate completed a degree programme and 27% a diploma programme to gain initial registration. Less than a fifth, i.e. 18.2% of nurses with a current annual practicing certificate hold a Bachelors degree. However, the Nursing Council reports a more than fivefold increase in the number of post registration Bachelor degree qualifications for the period between 1995 - 1999. Although the content of the educational preparation of the nursing workforce is crucial to nursing research and research utilisation in clinical practice, it is only part of the influences exerted on the overall picture.

It is of importance to acknowledge the impact that socio -cultural, political and/or economic aspects, specific to New Zealand, have on nursing research and research utilisation. New Zealand society is based on an understanding of biculturalism, aiming at honouring the principles embedded in the Treaty of Waitangi, i.e. partnership, protection, participation and equity. Implications of these principles should be considered in the conduct and dissemination of research in nursing, and the implementation of the findings.

Geographical isolation, legislation and governmental policies put more constraints on nursing research activity. Availability of some health care resources, appliances or medications, can be limited for example by the decisions made by PHARMAC etc. Furthermore, access to various study populations or intellectual resources, i.e. experts in specialty fields of nursing research, are confined by the low population numbers.

In summary, it can be said that there is a need to further study relevant factors underlying successful research utilisation in clinical nursing practice. Building on existing frameworks, taking into account the differences of the setting, an assessment of the essential barriers and facilitators that a group of nurses in New Zealand experience can shed some light on the state of research utilisation in clinical practice in this country.

### **1. 3. Aim and Significance of the Study**

This study is a replication of a research study carried out by Funk et al. (1991a). The purpose was to assess the barriers to and facilitators of research use in clinical practice in a sample of New Zealand nurses. The factors assessed for their impact on research use are modelled by Rogers' (1995) theoretical framework on the diffusion of innovation and comprise attributes in the domains of the individual nurse, the organisational setting, the research itself and of communication.

#### **1. 3. 1. Research Question**

The main research question for this study was:

- What are the most frequent barriers to and facilitators of research use in clinical practice stated by a sample of New Zealand nurses and midwives as measured by the BARRIER's scale?

#### **1. 3. 2. Specific Aims**

The specific aims of the project were:

- To assess the barriers to and facilitators of the use of research in clinical practice in a sample of New Zealand nurses and midwives.
- To discuss the findings of the New Zealand sample in comparison with international studies using the same research instrument.
- To evaluate the BARRIER's scale questionnaire psychometric characteristics with a culturally different population.

A search on electronic database, including [CINAHL] and [Medline] for the years up to 2000 did not yield any published study that reported on the assessment of barriers of and/or facilitators to research utilization within clinical nursing practice in New Zealand. Therefore, this study has a significant contribution to make to advance knowledge on factors pertinent to research utilisation in nursing practice within this country. Furthermore, the replication of a study in a different setting, and the reuse and further refinement of a previously developed research instrument is a valuable

contribution to facilitate research utilisation (Crane, 1995; Funk, Tornquist & Champagne, 1989a; 1989b).

#### **1. 4. Overview of the Thesis Structure**

Chapter One begins with an introduction and the relevant background to the study and outlines the aim and significance of the study and the structure of the thesis report.

Chapter Two reviews the literature relevant to nursing research utilisation within the broader theoretical framework of the diffusion of innovation model (Roger, 1995) and particularly in the context of nursing in New Zealand. Research utilisation will be addressed historically. Furthermore, research utilisation models are presented. Issues impacting on research utilisation, namely the use of diverse methodological approaches in nursing research and debates within the evidence based practice movement will be discussed.

Chapter Three outlines the methodological approach used in the research study and comprises considerations made in regards to the sampling strategy, the data collection process, and the statistical analysis techniques employed. The ethical issues that were considered in the development of the study are also discussed.

Chapter Four presents the findings of the study generated by analysis of the collated data of the 164 returned questionnaires. The sample's demographic characteristics and results of the questionnaire are reported in terms of their descriptive values, relevant relationships within the data and in comparison with data from overseas studies that have previously used the research instrument. Psychometric testing of the instrument and the result of two factor analyses are also presented.

Chapter Five provides a critical discussion of the results in Chapter Four, set critically in the context of the literature reviewed in Chapter Two. Suggestions for further research, and the implications and recommendations for practice are put forward on the basis of this discussion.

## **Chapter 2:**

### **Literature Review**

Research and research utilisation are integral and necessary aspects of professional nursing practice, as highlighted in Chapter One. After a presentation of the theoretical framework of the study, an overview of the development and scope of nursing research will be given. The conceptual structure of research utilisation will then be critically analysed and put into context, taking account of the influence exerted by the use of differing research paradigms and the relationship to the evidence-based practice movement. Various models of research utilisation are compared.

In the remaining review of the literature pertinent to this study, aspects generally relevant to the process of research utilisation will be critically discussed. The discussion is organised within the theoretical framework of Rogers' (1995) diffusion of innovation model. The specific function, responsibilities and problem areas that arise out of the characteristics of key elements in the process, i.e. the individual as adopter, the organisation and the research as innovation, will be outlined. Special consideration will be given to the situation of the New Zealand nursing context.

#### **2. 1. Theoretical Framework**

Inquiry into research utilisation in nursing practice can be approached based on several theoretical models (Crane, 1985). Research utilisation is a process in need of incorporating methods and principles of change management theory (Kitson, 1999; Swansburg, 1995). This process has to build on a definition of research utilisation as a conceptual entity. The main structure of Rogers' (1995) model is outlined to form the framework for the following review of the literature.

The overview is structured around the model's four key elements, i.e. the individual as adopter, the organisation as social context, the research as innovation and the necessary communication channels through which the key elements are related to each other.

### **2. 1. 1. Rogers' Diffusion of Innovation Model**

In the development of the questionnaire used in this study, Funk et al.(1991a) derived four factors that closely resemble the framework of the 'diffusion of innovation' model described by Rogers (1995). Diffusion research has its origin in the early decades of this century. Rogers, a social scientist, developed the model in the early sixties and explored and revised it continuously into the nineties. Throughout these three decades the model had been widely researched and applied in several disciplines, amongst them medicine, and more recently the field of nursing. The basic assumption of the model is that:

diffusion is a process by which an innovation is communicated through certain channels over time among the members of a social system. (Rogers, 1995, p.5)

The conceptual structure of the process model has four key elements interacting and influencing each other throughout the diffusion process that is made up of five phases.

These key elements are:

**The adopter:** Adopters are the people that take on, or oppose the take-on of the innovation. In the present study's context the adopters are the nurses and midwives in the wards.

Adopters can be grouped according to their place within the social network and the speed with which they take up the application of innovations within five distinct categories. The five categories are innovators, which includes nurse researchers, early adopters, early and late majority, and laggards (Rogers, 1995). These categories of

adopters can be further viewed in terms of some specific characteristics regarding their innovativeness. Rogers (1995) describes these characteristics in three main broad domains: socio-economic, personality and communication behaviour.

Rogers (1995) argues that early adopters seem to have more formal education and a higher social status. They display, on a personal level, a higher ability to deal with abstraction, cope better with uncertainty and risk, and have generally a more favourable attitude toward change. Research evidence has shown that innovators and early adopters have a central place within a particular social system, with an extensive formal and informal contact network. This includes their more active search for information about innovation and more exposure to mass media communication channels. Contact to change agents are higher and so is the degree of their opinion leadership within their social system (Rogers, 1995).

In nursing it has been documented that advanced practice nurses and/or clinical nurse specialists that occupy a role in which there is an expectation of early adoption of research results, can play a crucial part in their role as change agents (Crane, 1995; Dooks, 2001; Elcock, 1996; Mackintosh & Bowles, 1997). Therefore, it can be suggested that the characteristics of the adopter sub groups can be used to advantage in the planning of the form and content of the diffusion of innovations for a desirable change of clinical nursing practice.

**The innovation:** Research results requiring adaptation or change of existing nursing practice are the innovation in this study context. Innovations have five characteristics that are pertinent to the diffusion process. These characteristics are 'relative advantage', 'compatibility', 'complexity', 'trialability' and 'observability' (Rogers, 1995, pp. 208).

The relative advantage of an innovation is the perceived superiority over the status quo. Adoption of an innovation has to be linked with



some benefit, be it of an economic, social, or of some other nature. For example, specific adopter sub groups could have an affinity for specific benefits, i.e. some adopters might be keen on new interventions that save time and money. Whereas another sub group might be more attracted by some form of individual gain. Rogers (1995) claims that 'preventative innovations' are far more difficult to diffuse because of the generally longer time lapse between their adoption and the desired beneficial consequences, or the non observability of the consequences, respectively. This fact could be of relevance to nursing service delivery that aims at health promotion and to nursing practice that is concerned with preventative interventions.

Compatibility, i.e. the fit between the research finding and the values, previous experiences in, and needs of the practice setting the research finding is targeted at, also has to be given consideration. Estabrooks (1998) has argued that the gap between theory and practice is often overshadowed by the unpredictability of the need for reinvention. Reinvention is an important factor to consider when the research findings are to be translated for, or moved from the study setting to the clinical practice setting.

The cognitive or technical newness of research findings, i.e. their complexity compared to the existing practice does influence their acceptability. The easier a new idea or procedure is understood and applied, the faster it will diffuse through the system (Roger, 1995).

The possibility of trialing and experimenting with the practical implication of a research study's finding, in a limited fashion, is another important feature of the innovation. Especially for the early adopter group, this trial period decreases the level of uncertainty that every change contains.

Observability is the term used by Rogers (1995) to describe the essential characteristic of the innovation to make itself visible to

others. The less a change is visible the more difficult it is to convince a potential adopter to take the innovation on.

**The social system:** An organisational structure, that is evident in an institution like the one of the hospital in this study, presents a social system with its own culture, defining norms and values. These contextual aspects of the system can potentially facilitate or hinder the diffusion of research into the practice of the individual working within the organisation.

Furthermore, the organisation has an influence over the type of adoption decision that is made. Rogers (1995) describes three types of decision: (1) optional innovation-decision, where the choice lays with the individual; (2) collective innovation-decision, where an agreement on adoption is reached among the members of a system, and (3) authority innovation-decision, where few individuals with power make the decision.

The change management practices employed by the organisation can have considerable impact on the success of introducing new research based practices. Implementation of an innovation, rather than adoption, has been specified as a distinct aspect of concern within organisations. A two phase model for the innovation process in an organisation is described by Zaltman, Duncan and Holbek (1973). After the initial perception of a need for innovation and the fit of an innovation with the problem at hand, a second stage of implementation should occur. Within the second phase, the innovation is modified and reinvented to match the organisation, the innovation is then clarified for the members of the organisation and routinised, i.e. fully incorporated into the organisational activities.

**The communication channels:** Within the model of diffusion of innovations, communication is seen as a crucial process via which an innovation is spread amongst the members of the social system. This process differentiates between the source of an innovation

(research result) and the channel (face to face contact, presentation, book or journal publication etc.) by which it is transmitted to the targeted receiver. The channels have been differentiated as being either of an interpersonal or more collective nature, i.e. face-to-face contact versus mass media; and being sourced from the local or from outside the local social system (Rogers, 1995, p.194). Depending on the stage of the diffusion process and the adopter category, different channels have greater importance for effective communication.

A factor that has been described as discriminating in interpersonal communication is the degree of homophily between the parties. Homophily describes the level of equity in terms of personal and social characteristics, i.e. age, education, social class, professional status etc. (Lazarsfeld & Merton, 1964; in Rogers, 1995). At the other end of this equity continuum is heterophily, a high degree of difference in the aforementioned characteristics. Interpersonal communication that occurs between homophilous parties increases the speed by which diffusion of innovations occurs, however this 'horizontal' pattern of diffusion could present a barrier to the flow of the innovation throughout a more complex and larger social organisational system (Rogers, 1995).

The process underlying the model of diffusion of innovation is one of change management, with a structure that facilitates the implementation of change in a planned fashion.

Rogers devised five phases in the ensuing process (Swansburg, 1995). These phases are:

Phase 1: Awareness

Phase 2: Interest

Phase 3: Evaluation

Phase 4: Trial

Phase 5: Adoption

In all of these phases the four key elements discussed previously have unique influences on the process through their given characteristics.

The application of this theoretical framework has been summed up by Swansburg (1995) commenting:

Rogers' theory depends on five factors for success. These factors are as follows:

1. The change must have the relative advantage of being better than existing methods.
2. It must be compatible with existing values.
3. Complexity: more complex ideas persist even though simple ones get implemented more easily.
4. Divisibility: change is introduced on a small scale.
5. Communicability: the easier the change is to describe, the more likely is it to spread. (p. 251)

## **2. 1. 2. Summary**

The theoretical framework used for this study is drawn from the diffusion of innovation model by Rogers (1995). The four key elements, i.e. adopter, organisation, innovation and communication channels have been described in terms of some of their specific characteristics pertinent to the diffusion process. The process itself has been outlined into the five phases of awareness, interest, evaluation, trial and adoption. The key elements' characteristics and the features of the individual phases of the process have implications regarding the research utilisation process in clinical nursing practice within a hospital setting.

Following a general positioning of research and research utilisation in nursing that takes into account influencing factors and relationships, the literature is now reviewed critically, based on the theoretical framework and its implications for research utilisation in clinical practice.

## 2. 2. Nursing Research

Nursing research is a relatively new scientific endeavour compared to other disciplines. Over the last century nursing has embraced research to develop and strengthen its position as a profession. It has been recognised that there is a need for a unique knowledge base to achieve professional identity within the health care context (Polit, 1997).

A fundamental event in the history of nursing research occurred in 1952 with the publication of the premier issue of 'Nursing Research' in the United States. The first journal dedicated entirely to nursing research (Sarnecky, 1993; Stevenson, 1987). Since then, the numbers of nursing journals that publish research articles have increased markedly and include a variety of research publications that are dedicated to sub specialities within nursing.

The early nursing research agendas were concerned with the study of nursing education. About thirty years ago, with an increasing number of nurse scholars with academic credentials pursuing theoretical inquiries into nursing practice, the need for clinical nursing research became more apparent (Polit, 1997). In the last two decades however, driven heavily by economic factors, nursing research has been often guided by priority research areas, set by government policy aimed at reducing increasing health care delivery costs. Furthermore, the need for pivotal research into clinical practice, combined with the efforts to contain health care cost, led to the attempts to establish research priority lists internationally (e.g. Bond & Bond, 1982; Cooney et al., 1995; Daly, Chang & Bell, 1996; Lewandowski & Kositsky, 1983;). However, the impact that the establishment of such priority lists have had, in terms of effective subsequent research output, has yet to be adequately evaluated.

The history of nursing research in New Zealand parallels the above developments, albeit in a somewhat delayed time frame. In New Zealand, nursing entered the academic world in the seventies after a review of nursing education, commissioned by the then Department of Health (Carpenter, 1971). Diploma and Bachelor degree nursing programs were

then established at tertiary institutions and the transition from diploma to degree education has been completed in the mid nineties. The first doctoral degree was awarded in 1988 (Sigsby & Bullock, 1996).

Chick (1987) noted in her article about nursing research in New Zealand that:

The form and place of nursing in any society is shaped by interaction of it's historical origins with political and economic pressures arising in the contemporary sociocultural context.  
(p.317)

In New Zealand history, research seems not to have played an important role in nursing and is arguably still not 'fully incorporated into nursing identity' (Chick, 1987, p. 319). Outlining the issue further, Chick states how the move from hospital based nursing training to tertiary education - with the opportunity to pursue post graduate degrees and nursing doctorates within New Zealand - has promoted a broader acceptance of nursing research. However, Chick (1987) was disappointed about the slow development of position of research within clinical practice that were forecasted at her time.

Bachelor degree programs and post graduate nursing education programs at the tertiary level do include education about nursing research. In a recent survey of all nurses, midwives and enrolled nurses that applied for their annual practising certificate to the New Zealand Nursing Council, it was reported that 18% of registered nurses hold a Bachelor's degree, 0.7% a Master's degree and 0.1% (n=16) hold a Doctorate (Nursing Council, 2000a). These figures are from a 31,801 strong sample, representing a 70% response rate. Thus, the part of the nursing work force that can be expected to have some knowledge of research and its processes is still small. This poses a concern for undertakings in nursing research utilisation. The small number of academically prepared nurses is reflected also in the paucity of nationally published nursing research. The journal 'Nursing Praxis in New Zealand', inaugurated in 1985, has remained the only peer reviewed journal dedicated to the publication of research articles.

The history of nursing research itself has a fundamental influence on any discussion about research utilisation. Other influencing factors that are crucial to a better understanding of research utilisation will be discussed after the following conceptual definition.

### **2. 3. Research Utilisation**

There are several considerations to make to gain a comprehensive understanding of research utilisation in clinical nursing practice. So far, a theoretical framework underlying the process of research utilisation and its emergence as essential activity, developing out of the historical developments in nursing research, has been explored. Following this exploration, some conceptual and contextual factors pertinent to research utilisation are reviewed.

#### **2. 3. 1. Conceptual Definition**

The term research utilisation has not been unequivocally defined in the literature (Estabrooks, 1998). The view on what constitutes research utilisation spans from the use of findings in clinical practice to the task of carrying out an actual research project. Closs and Cheater (1994) state that 'research utilisation means rather more than simply the practical implementation of research findings' (p.762). The complexity of the term, and the lack of common understanding for research utilisation contributes to the uncertainty of practising nurses regarding what is expected from them and what skills they need to fulfil these expectations. There is a difference between the critical review of a research report to evaluate the appropriateness of the findings for one's practice and the competencies needed for the planning and conducting of a research project.

Stetler (1994) divides the term research utilisation into the three functional levels of instrumental, conceptual and symbolic utilisation. The instrumental use is a direct use of results in practice, whereas the

conceptual use is defined as being of an indirect form, i.e. influencing one's thought or attitudes without influencing obvious changes in practice. Symbolic utilisation is seen as being of a persuasive nature where research results are used to influence other people. Depending on the context of the individual nurses, it is understood that they might need assistance from others to achieve all levels of integration, i.e. policy and procedure writing or change of equipment (Stetler, 1994).

Specific actions, skills and knowledge requirements that are necessary for the involvement in research and research utilisation at different levels of professional expertise have been earlier described by Stetler (1983). Stetler sees a 'basic responsibility of all nurses to understand the importance of research to nursing and support the effort of others' (p. 18). The involvement of nurses has been described in four categories. Firstly, the facilitation of research that is conducted by others. Secondly, the routine use of the research process in practice to solve problems. The involvement in the third category is the utilisation of research findings, and fourthly the conduct of research. Stetler (1983) acknowledges that, despite the '...single most important activities of a nurse...to remain current in order to provide up-to-date, scientifically based practice' (p. 19), organisational support must be evident in these categories, mainly for research utilisation and the conduct of research.

Estabrooks (1999) reports on empirical support for a conceptual structure model of research utilisation. Through a complex process of structural equation modelling, she tested two different theoretical models of the concept. The first, a simplex, longitudinal model hypothesised research utilisation to be influenced in a temporal order. However, this model could not be sustained from her results. A second, common cause model tested by Estabrooks, suggested that the three factors of direct, indirect and persuasive research utilisation existed and were influencing the overall measure of research utilisation. The underlying concept of research utilisation, in turn, influenced nurses responses to indicators measuring the concept 'research utilisation' over time. This model demonstrated convergence with the data obtained from 600 nurses.



Although the conceptual make up of research utilisation is not as yet unequivocally defined, efforts have been made to define and develop models that guide the process of research utilisation in clinical nursing practice.

### **2. 3. 2. Models of Research Utilisation**

Several individuals and groups of nurse researchers in the United States have developed models for research utilisation over the last three decades. White (1995), in her comments about three of the most prominent models of research utilisation, suggests that they show more similarities than differences. This might be because of their common intent to bridge the research practice gap. Whereas the Conduct and Utilization of Research in Nursing (CURN) model, and the Iowa model of Research in Practice were focusing on the organisational level of the utilisation process, the Stetler model addressed the process from the more individualised perspective of the clinician.

The CURN project, seeing research utilisation as an organisational process, has been described by Horsley et al. (1978). Six distinct phases have to be followed in this research utilisation model that 'complement quality assurance programs' (p. 6). The initial two-fold step is the identification of nursing practice problems that need a solution, and the provision of resources to access valid research information. This research based knowledge is then, in the second phase, assessed regarding its validity and feasibility within the organisation. In the third phase, a nursing practice intervention is designed which meets the need arising from the clinical problem. After a trial and evaluation of the innovation in a pilot area in the fourth phase, a decision is made to adopt, adapt or reject the innovation within the organisation. If the adoption decision is made, the sixth and final step becomes the development of the necessary structures and support to disseminate and implement the innovation within the whole organisation.

The Stetler model of research utilisation has been termed 'the practitioner model of research utilisation' (White, 1995, p. 414). Designed more than two decades ago and subsequently refined, the process framework is aimed at giving guidance to individual nurses in their utilisation practice (Stetler, 1994). The model is divided in six phases similar to the CURN model: 'preparation', 'validation', 'comparative evaluation', 'decision making', 'translation/application', and final 'evaluation'. A systemic perspective of research utilisation for the individual is added, and is made up of the concepts 'environmental input', 'internal throughputs' and 'user output'. This systematic perspective, linking the process model to other influencing factors, accounts for the complexity of research utilisation.

More individual approaches to establish a successful strategic model of research utilisation within a particular organisation or health care agency can be seen in the two following examples. Dufault and Sullivan (2000) report on a collaborative research utilisation (CRU) approach to evaluate the effects of pain management standards on patient outcomes. The CRU model is based on the linkage of academic researchers and students, taking advantage of the relationship between knowledge developers and users. The model was based on a six step approach which the authors described as: brainstorming problems, round table discussions, development, testing, adoption and implementation. Barnsteiner, Ford and Howe (1995) describe the model of research utilisation that directs clinical practice at the Metropolitan Children's Hospital of Philadelphia. Based on their institution's mission statement, that includes an emphasis on 'high standards of paediatric nursing care based on the development and incorporation of research' (p. 447), a practice committee structure with six sub committees has been designed. This structure ensures that the involvement of all staff is incorporated at different levels to ensure research dissemination and implementation.

### 2. 3. 3. The Influence of Research Paradigms

The multitude of research paradigms employed in nursing seems to be of concern to research development itself, and especially for the facilitation of research utilisation. The discussions around quantitative and qualitative research approaches, and the opposing paradigms they supposedly represent, seem to impact negatively on research utilisation (Bonell, 1999). The discourse on a qualitative versus a quantitative research approach in nursing is deeply rooted within the question about what nursing is, and therefore, what type of knowledge nursing should be based on.

Nurses' professional knowledge does not solely consist of empirico-scientific knowledge derived through traditional methods. Carper (1978) proposed four types of knowledge sources - empiric, personal, ethics and aesthetics. Traditional empirical methods of scientific enquiry use a quantitative positivist research approach. This approach aims to test theory by a deductive process in which hypotheses are falsified or supported. To achieve high levels of reliability and validity, the study environment is controlled for by the research design and units of enquiry are operationalised. On the other hand, qualitative methods aim at the production of meaning to understand the subjective context in the individual situation. This is pursued in an inductive fashion. The researcher collects and analyses the data in the language of the participants in the research setting she has immersed herself in. From the facts obtained this way, it is attempted to generate theory or clarity of previously undefined concepts (Duffy, 1985; Polit, 1997).

To be able to carry out all the tasks and manage all the situations in the complexity that nurses encounter in their daily work, knowledge of various kinds is needed to underpin required skills and competencies, be they of a more technical, or 'hands off' nature. Depending on the issue at hand, the methodology employed in nursing research has to be chosen in accordance with the phenomena to be studied. To illustrate, one could for example look at the issue of pain management in nursing. Various aspects

of pain and pain assessment, management and education relevant to nursing practice have been studied using a variety of research approaches from the quantitative (e.g. Bennett, 2001; Czurylo, Gattuso, Epsom, Ryan & Stark, 1999) and qualitative (e.g. Gibson & Kenrick, 1998; Madjar, 1981; 1991) field, or a combination of both approaches (e.g. Seers & Friedli, 1996).

Another voice that has received increasing support within the quantitative versus qualitative debate is the call to create an entirely new view on nursing research. Not the means by which the data is collected and analysed but the relevance the research has to directly influence nurses' practice in the clinical setting is of interest. Greenwood (1984) commented that a majority of nursing research was fruitless if it neglected the fact that nursing is 'a social phenomena and a practice discipline' (p.77). This author raised the need to structure nursing inquiry as action research to bridge the gap between theory and practice, and to make research and its findings relevant to nurses in clinical practice.

The use of action research in nursing has since been further discussed (Hart, 1996; Holter & Schwartz-Barcott, 1993; Nolan & Grant, 1993; Rolfe, 1996). These authors emphasise the benefit of action research regarding research utilisation. The cyclic nature of the research process aims at direct change for improvement of practice. The process starts out with a joint problem definition/needs assessment and incorporates reflective practice and immediate application of generated new knowledge in the specific natural context. The lack of a systematic identification of core characteristics and general definitions of action research, however, need some further development to support its superior place within nursing research (Hart, 1996).

To narrow, or even close the gap between theory-research-practice and to consequently enhance research utilisation, requires that nursing sees beyond the discourse of qualitative versus quantitative methodology. Corner (1991) and Rolfe (1994) support this stand, one by a research example using triangulation of methodology, and the other in an attempt to

define a new model on research classification. Although paradigms influence researchers' priorities, the ultimate goal is to improve the health and well being of people using the findings of research. Ford-Gilboe et al. (1995) conclude, therefore, that:

Nursing could be on the forefront of developing methodologies that combine numbers and stories in novel and exciting ways to maximise understanding and the impact of the knowledge that is created, regardless of the paradigm perspective used. (p. 25)

However, there are problems imposed on research utilisation arising from the debate on what nursing research is, ought to be, and how it is to be best approached. If some research approaches, and the knowledge they produce, are seen to be more valid and/or more useful than others, then what relevance has this regarding the application of that knowledge in clinical practice? This issue is further explicated in the newer debate around evidence-based practice and a possible answer to the above question might be found.

#### **2. 3. 4. Research Utilisation in Evidence-Based Nursing**

With the development of the evidence based medicine (EBM) movement, a hierarchical frame of reference has been set regarding the value of various evidence sources. Embracing that value system within evidence based nursing (EBN), the Joanna Briggs Institute for Evidence Based Nursing and Midwifery publishes in their practice guideline sheets a four level evidence hierarchy ladder (Joanna Briggs Institute, 2001). At the top of the scale are (I) systematic reviews of all relevant randomised control trials (RCT), followed by (II) a single RCT, the third level is subdivided in (III.1) well designed non randomised control trials, (III.2) preferably multicenter cohort or case control studies and (III.3) multiple time series, with or without intervention, respectively 'dramatic results in uncontrolled experiments'. At the bottom level (IV) are listed descriptive studies together with expert opinions.

Nursing, although in need of using adequate scientific knowledge as a basis for its practice, will have to be careful not to neglect the rich source of knowledge and usable insight that is gained from the qualitative study of phenomena pertinent to nursing. Recently, Kearney (2001) put forward a framework to evaluate levels and applications of qualitative research evidence. She describes five categories of qualitative findings that vary in their levels of complexity and discovery. Further, Kearney (2001) proposes four modes of clinical application of qualitative evidence, i.e. 'insight or empathy', 'assessment of status or progress', 'anticipatory guidance' and 'coaching'.

Estabrooks (1998) also cautions the thoughtless application of a conceptual frame for evidence from another discipline. Support for a conceptualisation of nursing knowledge that is broader than just scientific is given by Estabrooks (1998), based on a study with 600 randomly selected nurses from the Alberta Association of Registered Nurses in Canada. The nurses based their practice mostly on knowledge gained from 'information learned about each patient as an individual', 'personal experience of nursing patients over time' and 'information learned at school'. The most common source of research knowledge for this sample was 'nursing journals' (52%). However, further analysis of the data revealed that the primary nursing journals read, were not research journals.

In the same vein, Stetler et al. (1998) report on their project to define evidence for nursing practice within their organisation. A medical initiative to create practice guidelines in their organisation, using levels of evidence similar to the one described above, made them realise that:

Neither this language nor routine reliance on large scale randomised control trials or meta-analyses was a fit for the division of nursing. (p. 47)

In summary, the integration of all knowledge, despite its source, into comprehensive evidence that ultimately will be used to improve clinical practice, is a task still to be accomplished (Estabrooks, 1998).

## **2. 4. Individual, Organisational and Research related Issues**

Inquiries into aspects of importance to research conduct and research utilisation have received a considerable amount of attention since Ketefian (1975) reported on the poor state of application of research findings in clinical practice. Fundamental considerations to be made in the discussion on research utilisation in clinical nursing practice have been outlined in the previous sections. There are more factors facilitating and hindering nursing research in general, and research utilisation in particular, that have been studied from various view points. These factors are many and varied, and their interplay is complex. To facilitate the discussion around some of the pertinent factors, the remaining literature reviewed is subdivided into three thematic domains focusing on the individual nurse, the organisation, and the research itself as a process and product.

### **2. 4. 1. The Individual Nurse and Research Utilisation**

Factors that influence nurses' engagement in research utilisation have been studied widely. It is apparent, given the complexity of research utilisation, that multiple issues are of concern, namely the individual nurse's educational preparation, their attitudes and beliefs about research and research utilisation, and their perception of the hindering and facilitating factors for research use in their daily practice. Moreover, as has been explicated within the previously described theoretical framework, the individual nurse's characteristics, including their specific role within the organisation, might have an impact on research utilisation behaviour.

The development of nursing education from vocational, hospital based training to degree education in the tertiary sector has also had its bearing on nurses' knowledge and skills pertaining to research utilisation. Harrison, Lowery and Bailey (1991) examined the changes that occurred in a sample of nursing students' (n=54) knowledge about and attitudes toward research after a undergraduate research course which focused on research utilisation teaching. Although the knowledge scores were significantly higher at the end of the course than at the beginning, the

scores declined markedly again on the third measurement, which was taken at the end of the nursing program. The authors raised the question about students' knowledge retention, especially in terms of their ability to adequately criticise and utilise research finding in their practise after graduation. However, the finding that students had more positive attitudes toward research at the end of the nursing program, compared with their test scores before the research course, was encouraging.

Similarly, Pond and Bradshaw (1996) report on an positive increase in the scores on their measurements of attitude toward research, collected before and after an educational intervention. This intervention aimed at presenting research knowledge and skills in a 'meaningful and realistic context' (p. 182) to their student sample (N=107). Bostrom, Malnight, MacDougall and Hargis (1989) report on the interesting differences between attitudes of nurses with a degree and nurses with diploma training. Degree nurses were more confident about their skills and knowledge to conduct research, implying that this might impact on their beliefs about research being as important as 'bedside' nursing.

Nurses' attitudes toward research have been widely identified as one of the most prevalent factors that impact on research utilisation (Funk, Tornquist, & Champagne, 1995; Lacey, 1994; Pettengill, Gillies, & Chambers Clark, 1994). Attitudes are also a prominent factor in determining the involvement of nurses in clinical research activities (Rizzuto, Bostrom, Suter, & Chenitz, 1994). As one important component of the 'internal throughputs', positive attitudes can facilitate research utilization (Stetler, 1994). Furthermore, Champion and Leach (1989) report in their study a significant positive relationship between research utilization and attitudes toward research.

As mentioned earlier there is a dearth of nursing research in New Zealand. Consequently, studies on educational outcome such as change in behaviours or attitudes, e.g. after research courses, are missing. Horsburgh (1989) commented after a field work study investigating graduate nurses' adjustment to their initial employment, that the general



hope of nurses from the comprehensive tertiary based program to act as change agents once they are in practice, has not been fulfilled. A decade later, Walker (1998) conducting an explorative study in this field, held focus groups with five newly practising nurses in their first year after graduation. The aim of the focus groups was to identify if the outcome criteria of the degree programme had been met. Walker's sample, although not representative, believed that their knowledge about research would be linked to further academic study. A result which is rather disappointing, arguing that the research content within the bachelor degree program should enable graduates to understand and critically review research reports for their appropriateness in their clinical practice. In addition, the sample stated that it was difficult to challenge practice behaviour that does not reflect current best practice evidence. Walker (1998) further suggests that this issue has to be addressed in the educational setting to prepare prospective nurses for the challenge of implementing research findings to achieve best practice.

Some benefits of evaluating outcome behaviours and implementing change of curriculum for the nursing research component in academic nursing programs has been reported by Miller (1996). Students initial requirement in their research course to develop a research proposal seemed to have negatively impinged on students' ability to focus on the learning centred around research critique. Based on the agreement that dissemination and utilisation of research was the prime outcome expected to be demonstrated by the graduates, the content and structure of research education at their institution had been changed. These changes included teaching about the research process within practice setting situations, inclusion of vignettes and the abandonment of the research proposal in favour of a research utilisation group project.

The needs of individual nurses, educated before the degree era, that mostly had not had any specific preparation in research and research utilisation, have to be given consideration. Barriball, While and Norman (1992) conclude from their literature review on continuing professional education for nurses that:

Many current continuing professional education events fail to deliver anticipated improvements in reflective practice, research awareness and creative and critical thinking needed to improve patient care. (p. 1138)

Furthermore, they comment on the paucity of assessment relating to the perception and needs of nurses regarding their continuing education. Apart from the negative impact this lack of needs assessment can have attaining the goal of increased research utilisation capability, the general cost-effectiveness and efficiency of continuing education is questionable (Barriball, While, & Norman, 1992). Similarly, Leino-Kilpi, Solante and Katajisto (2001) conclude that getting nurses to make use of the results of nursing research is one of 'the main challenges for continuing education in the future' (p. 187).

The review of literature regarding the influencing factors for research utilisation on the individual nurses' side shows several points worthy of attention. Personal characteristics of each nurse, i.e. awareness, attitudes and beliefs regarding research and research utilisation in clinical practice are of importance. However, with the discussion on the nurses' need for adequate educational preparation and support, it becomes progressively clear that the wider organisational context - be it an educational facility or a health care agency - has a considerable bearing on the success of implementation of research into clinical practice.

#### **2. 4. 2. Organisational Impact and Responsibilities**

Health care organisations have to respond to the demand of high quality service delivery, including nursing care, within often tight budgets. It seems obvious, therefore, that investment in and support of a structure that aims at developing efficient and effective clinical nursing practice would be beneficial to all health care organisations. An organisation, such as a hospital, has, through administrative and managerial structures, considerable impact on the activities (such as research utilisation) that take place within it. This organisational power to influence research utilisation,

however, entails the responsibility to ensure that the commitment and resources to support those desired activities are visible and available.

Nursing leadership has a prime role to play in the building of organisational capacity and in the support of an environment where research and research utilisation can flourish. Successful principles and methods to facilitate the process of research utilisation in an organisation have been described by the following authors. Horsley, Crane and Bingle (1978), outline the process of the previously described CURN project emphasise the need to provide visible and enduring support mechanisms to demonstrate organisational commitment to research utilisation. This support should be in the form of research committees, policies and procedures, and could further include the provision of resources in the form of personnel, time and available funds.

Hefferin, Horsley and Ventura (1982) examined the particular role of the nurse administrator in the promotion of research-based nursing practice. They report general agreement among their small sample (n=46) that nursing directors, supervisors and head nurses were the most likely people to promote the use of innovative practice. The majority of nurse administrators in their sample (88 - 97%) believed that securing the necessary resources and permission to implement innovations were the responsibilities of administrators.

Other authors describe similar organisational responsibilities in the description of research utilisation projects within their health care agency (Rutlege, & Donaldson, 1995; Stetler et al., 1998; Van Mullen et al., 1999). Change management, as an underlying theoretical feature of research utilisation and evidence-based practice promotion in an organisation, clearly has to be initiated and guided by the administrators of organisations. Organisations are encouraged to:

Develop a culture, capacity, and infrastructure for institutionalisation of research findings and other objective, systematically-obtained information to enhance the practice

of their clinicians, managers, educators and other staff.  
(Stetler et al., 1998, p. 52)

In summary it can be said that if research utilisation is to become part of everyday nursing care delivery, several issues have to be addressed at the organisational level. Administrators and other key people in the organisation have to show commitment to the process and support their staff in the process. This should include resources, including time, greater funding and adequate support facilities. Apart from efforts at the individual adopters and organisational level to enhance research utilisation in nursing, the way research is conducted, including its dissemination, has to be taken into account for its influence on the research utilisation process.

#### **2. 4. 3. Characteristics of the Research**

Because results of research are the innovations to be applied in research utilisation, it is important to consider several features of research. These features are mainly related to the structural make up of the research. Another pertinent issue is the reporting of the research and its results. The diffusion of research findings from their discovery by researchers to the point of application or use in clinical practice is a process that has to be adequately looked at.

One problematic area, arising because of divergent views on research stemming from different, i.e. qualitative or quantitative, methodological backgrounds has been discussed in a previous section. The need for a broad approach to knowledge generation for nursing practice has been outlined. However, regardless of the methods and methodology employed, research that ultimately aims at the use of findings in practice has to display certain criteria. Stetler (1994) outlined a set of assessment criteria before research can be utilised in practice. These criteria include the importance of validation regarding a study's methodological rigour or soundness. Furthermore, evidence from one study should have been substantiated by means of replication studies and/or

descriptions of similar studies or additional non research information. Research findings should also be clearly placed within a given context so that evaluation for the fit to other settings can be critically analysed, based on any similarities and differences. Finally, the level of effectiveness of 'current practice' has to be understood so that the expected innovation outcomes can be measured against it. This set of research assessment criteria clearly has implications for the appreciation of the value of research regarding its utilisation potential in clinical practice.

Much in clinical practice research is still conducted in a 'stand alone' way, leading to a lack in substantiation of evidence. This fact can be seen to emanate partly from the short history of nursing research (Mulhall, 1995). One solution to this problem supported by several authors is the fostering of replication studies, especially in the area of research projects by novice researchers, for example nursing students at masterate level (Crane, 1995; Funk et al., 1989a; 1989b).

The failure of research reports to be understood widely and to present the implications for practice clearly, including the expected outcomes, has been noted (Funk et al., 1989a; 1989b; Lacey, 1994; Rodgers; 1994). Caution to pressurise researchers into jumping to premature conclusions about the applications of their work (Downs, 1996) should not deter from the fact that research itself and its findings should be disseminated widely and in a form that is understandable by a wide range of practising nurses for easy utilisation. Dissemination of research findings should be an integral part in the planning of any research project, and can take various forms, i.e. publication in professional journals and monographs, presentations at conferences or information packs for practitioners (Akinsanya, 1994; Cronenwett, 1995; Funk, 1989a; 1989b; Stetler, 1994).

King, Barnard and Hoehn (1981) acknowledged two decades ago the importance of adequate communication for dissemination of research findings. They investigated several communication modes and influencing components to devise a model within the Nursing Child Assessment

Satellite Training (NCAST) project. They argue that the overriding concern is careful planning that allows flexibility. Researchers, in their view, have a considerable responsibility in systematically planning the dissemination of their findings from the very beginning of their project.

## **2. 5. Summary**

The review of the literature presented gives evidence to the complexity of research utilisation in nursing. The multiple interacting aspects, impacting on research utilisation as an essential part of daily clinical nursing practice, have to be acknowledged and critically analysed in their individual context. Constraints arising, and the possibility of facilitating activities at different levels, have to be assessed and explored to develop strategies for successful research utilisation, at the individual practitioner and the organisational level.

Due consideration of facilitation of research utilisation in the planning and presentation of research projects could additionally be of benefit. Nursing researchers can contribute to the achievement of that goal by investigating issues relevant to practising nurses, either in a participatory manner, or at least in a way that portrays the value and applicability of the research outcomes clearly. Wide dissemination of understandable implication for practice will support practitioners to use the findings in their clinical nursing practice.

The following chapter presents the methodological and procedural strategies employed for the survey of a sample of registered nurses in a New Zealand context. Furthermore, the research tool used to assess barriers to research utilisation in clinical practice that have been highlighted in the literature review will be described.

## **Chapter 3:**

### **Methodology and Procedures**

This descriptive questionnaire survey followed a non-experimental design by replicating the study of Funk et al. (1991a). The information in this chapter describes the study setting, the selection of participants and the data collection procedure. The research instrument used and the statistical data analysis employed will also be presented. Furthermore, the ethical considerations made for the study will be outlined and the limitations of the research project are described.

#### **3. 1. Study Setting**

The research was conducted in a 435 - bed hospital in the North Island of New Zealand. The hospital is part of a District Health Board (DHB) and serves an urban and suburban population of approximately 250,000 people. The district health board employs around 1'470 nursing/midwifery staff across its services, which cover inpatient and outpatient facilities for acute and long term care requirements.

As a tertiary institution the hospital where the research was conducted collaborates in partnership with several universities and a regional polytechnic for the education of nurses at undergraduate and post graduate level. Within the hospital, nursing staff are provided with opportunities for post registration education by several speciality areas that conduct educational courses of various lengths. For example, a six month certificate in acute care, or a year long emergency and trauma care course, at masterate level in conjunction with a local university.

### **3. 2. Participant Selection and Data Collection**

#### **3. 2. 1. Selection Criteria and Sampling**

The population accessed for the study were all of the registered nursing/midwifery staff working on the Inpatient wards in the above described hospital setting.

The selection criteria for the participants entailed:

- Permanent full or part time employment by the hospital;
- Registered nurses and/or midwives, i.e. Registered Nurses (RN), Registered Midwives (RM), Registered General Obstetric Nurses (RGON), Registered Psychiatric Nurses (RPN) and/or Registered Comprehensive Nurses (RCpN) of any designation; and
- Working in one of the Inpatient wards.

Returned questionnaires were excluded for analysis if the respondent:

- Was not a permanent staff member of any Inpatient ward; or
- If the participant was not registered as a nurse or midwife, i.e. enrolled nurse or nurse aid.

The decision on sampling strategies, including the sample size, was weighed up on several factors. Firstly, the statistical power in the analysis and the required precision of results were important factors, and the availability of participants, time and cost, were also taken into account (Schofield & Jamieson, 1999). The non random style of participant selection for this study was chosen, because facilitation of a randomised strategy could not be supported by the payroll manager of the institution. This was due to concern about participants' privacy. Thus, the decision to increase the sample size for this study was taken to overcome some of the limitations imposed by the absence of randomisation.

Access to the desired population of registered nurses in the hospital was by the charge nurses/team leaders of all the Inpatient wards. They were asked to mediate the distribution of questionnaire packs. Having the support from charge nurses/team leaders was critical as they played a



'gate keeper' role in the sampling strategy chosen (Schofield & Jamieson, 1999).

Before data collection began, charge nurses and team leaders of all Inpatient wards of the hospital were contacted by e-mail explaining the study and its aims and procedures. They were also requested to distribute the questionnaire to the number of registered nurses on their duty roster. Charge nurses/team leaders who did not respond to the initial e-mail were followed up personally by the researcher to ask for their assistance. Reasons for non response to the above request were change of person holding the position, or being on leave when the request had been sent. Another reason was time restraints caused by other work commitments.

The final sample population was 471 nurses, working in nineteen wards in different specialities of nursing. The specialities were: acute medical, surgical, paediatrics, adult rehabilitation and therapy (AT&R), coronary care unit (CCU), intensive care unit (ICU), neonatal unit (NNU) and gynaecology/obstetrics.

### **3. 2. 2. Data Collection Procedure**

The questionnaire packs comprising an information letter (Appendix 1), the research instrument (Appendix 2) and a postage paid return envelope were distributed to the Inpatient wards on the 31 October and 1 November 2000, respectively. A reminder notice (Appendix 3) was placed in the staff rooms of all wards two weeks after the initial distribution of the questionnaire packs. A sticker that expressed thanks to all who had returned a questionnaire, was attached to this notice. The final date for returns of completed questionnaires was the 30 November 2000. This time frame of four weeks ensured that all recipients of a questionnaire had had enough time to consider participation, taking into account a busy working environment that incorporates rostered and rotating shifts.

The questionnaires were returned in free post envelopes to the research supervisor's university office where they were collected by the researcher. The researcher proceeded then to collate and code the

returned questionnaires. The data was entered using the SPSS (Version 9.0) software package to create the final data set for analysis, which will be discussed after the presentation of the research instrument below.

### **3. 3. Research Instrument**

#### **3. 3. 1. Demographic Data**

A demographic data sheet (Appendix 2) was created by the researcher and reviewed by three academics, including the research supervisor, with nursing and research experience and context relevant cultural knowledge for its appropriateness in a New Zealand setting.

The demographic attributes measured were age, gender, initial nursing qualification, post registration education, research module availability in undergraduate and in the post basic education program, other qualifications and/or relevant skills, year of registration, work setting, designation and the amount of hours worked in two weeks. Furthermore, participants were asked to indicate if they had ever participated in a research project and how frequently they read nursing journals that published research articles. The reading frequency of research articles was assessed by means of five categories: at least once a week, at least once a month, at least once in three months, less than once in three months and never at all.

Peer review with nurse educators highlighted the need for further clarification on wording of some demographic items in the education section of the questionnaire. Such changes included former registration of hospital trained psychiatric nurse (RPN), baccalaureate graduates in midwifery (BM); and to differentiate more clearly between first nursing registration qualification and post registration qualifications.

### 3. 3. 2. The BARRIERS Scale Questionnaire

The BARRIERS Scale questionnaire was developed by Funk et al. (1991a). It has been used in a number of studies in different geographical settings and with various groups of health care workers (Funk et al. 1991a, 1991b, 1995, Funk et al., 1995; Dunn, Crichton, Roe, Seers, & Williams, 1997; Nilsson Kajermo, Nordstrom, Krusenbrant, & Bjorvell, 1998, 2000; Retsas & Nolan, 1999; Retsas, 2000). The questionnaire consists of four sub scales that assessed barriers to and facilitators of research utilisation, totalling 28 items.

These sub scales assess:

- a) Characteristics of the individual nurse as an 'adopter' of research findings;
- b) Characteristics of the organisation;
- c) Characteristics of research findings which, in this context, are seen as the innovation; and
- d) Characteristics of the communication of research findings, i.e. Issues around availability and presentation of research findings.

The sub scales above were identified through factor analysis by Funk et al (1991a), and are also key concepts of Rogers' (1995) model of the diffusion of innovations. A four point Likert type scale was provided for each statement to indicate the degree to which any questionnaire item was perceived to be a barrier to research use. The Likert scale was labelled: 1. 'Not at all'; 2. 'Little'; 3. 'Moderate'; 4. 'Great'. Two final open ended questions asked participants to state any additional barriers to, or facilitators of research use that respondents encountered in their everyday professional practice.

### **3. 4. Data Analysis**

#### **3. 4. 1. Quantitative Data**

The Statistical Package for Social Science (SPSS) version 9.0. was used for data analysis. The data was summarised with computed descriptive statistics which included frequencies, means, standard deviations (SD) and contingency tables. Skewness of variables' distribution was assessed. This first step in the exploratory data analysis ensured a thorough base, which enabled the researcher to conduct inferential statistics and to employ the appropriate tests (Unsworth, 1999). The items of the BARRIER's scale were ranked with regards to the cumulative percentage of sores of 3 (moderate barrier) and 4 (great barrier), respectively.

Non parametric inferential statistics, i.e. Mann- Whitney U test and Kruskal - Wallis, were chosen for testing differences between pair or groups of variables that were not normally distributed. These test statistics are adequate if any rigorous assumption about the sample distribution cannot be made (Polit, 1997; Story, 1999). Parametric tests in the form of independent sample T-tests and ANOVA were performed in instances where the distribution of variables could be assumed to be normal or close to normal as measured by the skewness index (SPSS Version 9.0 Integrated Results Coach). Spearman's rank order correlation was computed to test for strength and direction of relationships between variables and sub scales. Statistical significance was set at the  $p < .05$  level.

Factor analysis was performed using principal component analysis with Varimax rotation. Factor retention was decided upon the results of initial eigenvalues, percentage of explained variance and scree plotting (Child, 1990; Kim & Mueller, 1978a, 1978b; Kline, 1994; Polit, 1996). Loading was set to have occurred if an item had a measure of  $\geq .40$  on a factor. This loading level has been used by Funk et al. (1991a) in their initial study.

### **3. 4. 2. Standardised Qualitative Data**

Responses regarding the type of post registration qualifications were grouped according to their content focus and tabulated to produce frequency measures.

Responses to the two questions regarding additional barriers to, or facilitators of research use were collated verbatim in a master document. Questionnaire code numbers were retained with individual excerpts to facilitate tracking if necessary, and will be included in the presentation of the results. This data was then used for a thematic content analysis (Babbie, 1992). The responses were compared with the items of the BARRIER scale. Statements that indicated new barriers to, or facilitators of research use, were classed according to their thematic fit into the four sub scales. This analysis of the data was validated through a review of the process by the research supervisor.

### **3. 5. Ethical Issues**

Ethics approval for this study was granted by the Massey University's Human Ethics Committee (MUHEC) in Palmerston North (on the 10 October 2000) and the Wellington Regional Ethics Committee prior to commencement of data collection on the 31 October and 1 November 2000. General approval was also provided by the Staff Research Committee of Whitireia Community Polytechnic, Porirua. The research project conformed to the 'Code of Ethical Conduct for Research and Teaching involving Human Subjects' (Massey University) and the New Zealand Health Research Council Guidelines on Ethics in Health Care Research. Special ethical appreciation in the preparation of this study was given to issues of informed consent, anonymity, confidentiality and cultural concerns.

### **3. 5. 1. Informed Consent**

The questionnaire packages distributed to the clinical areas contained an information letter (Appendix 1) that outlined the purpose and procedures of the study, including contact details of the principal researcher and supervisor for any additional queries. Further, the rights of all participants and the benefits and risks of participating in the study were explicitly stated. In the information letter and the questionnaire it was stated that return of the questionnaire implied the respondent's consent to use the data for this study and the eventual publication of the results.

### **3. 5. 2. Anonymity and Confidentiality**

Anonymity was assured to each participant and enforced with the provision of a pre addressed free post envelope for the return of the questionnaires. Name identification was not required and the information letter asked participants not to put their names on the questionnaire. Data from all questionnaires was collated and reported in aggregated form only. Furthermore, to safeguard confidentiality, the researcher undertook responsibility to destroy the raw data when it is no longer required to validate any aspects of the study. Until then all data will be kept safely for up to five years, accessible only by the principal researcher or the research supervisor.

### **3. 5. 3. Cultural Concerns**

Due to the bicultural concerns that all New Zealand research is inclusive of cultural factors, this research was carried out in a way that acknowledged the fundamental bicultural principles of the Treaty of Waitangi. However, the project did not specifically impact on Maori people. The study population was viewed as representing the 'nursing culture' of the hospital site and information regarding ethnicity was not assessed.

The Wellington Regional Ethics Committee review board advised that more consideration would be given to the impact culture has on practice. The chairperson suggested that the questionnaire items would be reviewed with advice from the staff research co-ordinator of Whitireia Community Polytechnic, where the principal researcher was working at the time of the design stage of the study. Out of this review, it was decided to include a prompt in the two open questions at the end of the questionnaire. The inclusion of a prompt specifically mentioning 'cultural matters' was to enable participants to discuss any barriers and facilitators of a cultural context in comfort. Based upon these important amendments, the Wellington Regional Ethics Committee granted approval for the study on the 26 October 2000.

### **3. 6. Summary**

This chapter detailed the methodological processes employed for the questionnaire survey research into barriers to and facilitators of research use in clinical practice in a sample of New Zealand nurses. The study setting has been described and the participant selection outlined. Data collection and analysis procedures have been presented and the ethical issues considered for this study described.

The findings of this study will be presented in the next chapter, summarising the demographic characteristics of the sample, comparing the ranking order of items with overseas study that used the BARRIER's scale questionnaire and reviewing relevant statistical relationships of the sample sub groups and the ranking order.

## **Chapter 4:**

### **Results**

The results from the analysis of the questionnaire investigating the barriers to and facilitators of research use in New Zealand clinical nursing practice are presented in this chapter. Firstly, an overview of the demographic characteristics is given, including personal attributes of the sample, nurses' work area and designation, and their educational background. Following the presentation of the psychometric evaluation of the instrument, the item ranking will be compared with other overseas studies' results. Qualitative data from the two open ended questions will be presented using verbatim excerpts. Finally, the factor analysis results will be described. Discussion of these results in the context of the literature, theoretical framework and importance to research use in this particular setting will be discussed in the ensuing chapter.

#### **4. 1. Response Rate**

From the 471 questionnaires distributed to the acute care wards of the study site, 167 were returned within the one month time frame established in the information letter to the participants. Three questionnaires could not be included in the analysis because two did not satisfy an inclusion criteria set out in the previous chapter, i.e. one was filled out by a staff member identifying herself as working for the casual pool and another by an enrolled nurse. The third questionnaire was returned with the BARRIER's scale left blank.

A response rate of 34.8% was achieved. The data set analysed for this study was generated by collated responses from 164 returned questionnaires.



## 4. 2. Demographic Data

### 4. 2. 1. Characteristics of the Sample

The majority of respondents (93.3%) were female with a mean age of 34 (SD 9.25) years. Table 1. gives an overview on the age grouping of the sample. The percentage of male respondents (6.1%) is representative of the average male distribution within the nursing profession in New Zealand, which is 5.8% of all nurses (The Nursing Council, 2000b). However, the sample was clearly younger than the national average which was 42.6 years in 2000. Furthermore, the number of nurses in this study under the age of 45 years was almost 20% higher than the national average of 61.2%.

**Table 1: Age Grouping of Sample (n=164)**

Agegroup	Frequency	Percent	Cumulative Percent
20-29	61	37.2	38.6
30-39	54	32.9	72.8
40-49	30	18.3	91.8
50-59	11	6.7	98.7
>/=60	2	1.2	100.0
Total	158	96.3	
Missing 9	6	3.7	
Total	164	100.0	

The mean time since registration was 10.7 (SD 9.36) years ranging from one to 38 years respectively. A third (33.5%) of respondents had been registered for 4 years or less. Table 2. provides a summary of the distribution of the sample in terms of the years elapsed since their initial nursing/midwifery registration.

**Table 2 : Grouping of Sample according to their Years after Registration**

	Frequency	Percent	Cumulative Percent
1-4 Years	55	33.5	33.7
5-9 Years	37	22.6	56.4
10-14 Years	23	14.0	70.6
15-19 Years	16	9.8	80.4
20 and more	32	19.5	100.0
Total	163	99.4	
Missing	9	1	.6
Total	164	100.0	

#### 4. 2. 2. Work Area and Designation

Participants had eight options to indicate their work area: (1) medical, (2) surgical, (3) gynecology/obstetrics, (4) CCU, (5) ICU, (6) paediatrics, (7) AT&R and (8) 'other' with a space provided for the participants to specify the area.

A sample from each clinical area was received. However, the response rate for the differing areas ranged between the low 20 to 60 percentile of the questionnaires distributed to each individual area. Four out of the nine areas had a response rate of 50% or above.

Table 3. gives an overview of the respondents' work area. The option of 'other' was chosen by 19 nurses from the NNU and eight nurses from the oncology/haematology ward. The groups of nurses from the NNU and oncology/haematology ward were considered separately in the analysis. Two nurses each used the 'other' option to indicate that they were working in the area of neurology/neurosurgery or renal nursing, respectively. Because of the work content comprising many varied invasive treatments, e.g. neurosurgery or renal transplantation, the small number of nurses from the above areas was pooled with the respondents from other surgical areas.

From the sample (n=164), staff nurses made up the biggest group totalling 143 of all respondents (Table 4). The remaining questionnaires

were returned by charge nurses/teamleaders/co-ordinators and by educators, or clinical nurse specialists.

**Table 3 : Work Areas of Respondents**

Area	Frequency	Percent
Medical	25	15.2
Surgical	26	15.9
Gynaecology/Obstetrics	10	6.1
CCU	15	9.1
ICU	34	20.7
Paediatrics	15	9.1
AT&R	5	3.0
Neurology/Neurosurgery	2	1.2
NNU	19	11.6
Oncology	8	4.9
Renal	2	1.2
Missing	3	1.8
Total	164	100.0

**Table 4 : Designation**

Designation	Frequency	Percent
Missing	1	.6
Staff Nurse, Staff Midwife	143	87.2
CN/Teamleader/Co-ord	11	6.7
Educator/CNS	9	5.5
Total	164	100.0

One hundred and twenty five participants indicated that they worked 72 or more hours a fortnight which equates to a .9 or more full time equivalent employment (FTE) (Table 5.). Only 6% of the respondents worked equal to, or less than .5 FTE.

**Table 5 : Hours worked per fortnight**

Hours	Frequency	Percent
16.00	3	1.8
20.00	1	.6
36.00	2	1.2
40.00	4	2.4
44.00	1	.6
48.00	14	8.5
56.00	3	1.8
64.00	11	6.7
72.00	30	18.3
76.00	1	.6
78.00	1	.6
80.00	91	55.5
90.00	2	1.2
Total	164	100.0

### 4. 2. 3. Education and Qualifications

In line with the years since registration, 61 (37.2%) participants were educated in a baccalaureate degree programme. The remaining respondents indicated that they had comprehensive credentials attained from a tertiary institution, or that they were hospital trained (Table 6.).

**Table 6 : Type of Initial Qualification**

Qualification Type	Frequency	Percent	Cumulative Percent
Hospital Training	45	27.4	27.6
Comprehensive Diploma	57	34.8	62.6
Degree Program	61	37.2	100.0
Total	163	99.4	
Missing	1	.6	
Total	164	100.0	

The sample was nearly even in size regarding the exposure to a research module in their basic education/training with 49.4% affirming that research education had occurred in their initial professional preparation (Table 7.). Furthermore, with a third having had other post registration professional education, the majority of nurses had received some research education during their educational experience, prior to, or after registration.

**Table 7 : Cross tabulation of Research Module Availability and Qualification Type**

Qualification Type	Research Module in Basic Education		Total
	Yes	No	
Hospital Trained	2	42	44
Comprehensive Diploma	22	33	55
Degree Program	55	5	60
	79	80	159
Missing			5
Total			164

A research module is usually part of a degree programme at baccalaureate and/or masterate level. It is also often included in speciality courses. Ninety four (57%) respondents indicated to have participated in a research project previously.

**Table 8 : Post Registration Qualifications**

Qualification Group	Qualifications	n/59*
Speciality Qualifications	PGCertICU, ICU Speciality Course/Certificate, ENB Critical Care, DipCritCare, AdvCritCare Cert., ENB100	13
	NICU Speciality Course, Neonatal Course, ENB NICU	9
	RM	7
	Paediatric Speciality Course, Sick Children Course, Registered Sick Children Nurse	6
	Cardiac/Cardiothoracic Speciality Course	5
	PGCert (Mental Health), Cert. Psychiatric Nursing Skills, Psychiatry Course, Cert. Psychiatric Care	4
	Dip. Occupational Health & Safety	2
	Cert. AT&R Elderly, Cert. Gerontology Nursing	2
	OT Nursing	2
	Flight Nursing Course	1
	PGCert. Emergency & Trauma	1
	ENB Speciality Spinal Injury	1
	ENB Speciality Neuroscience	1
	PAP Smear & Mamma Check	1
	Diploma in Maori Health	1
	Renal Certificate	1
	Dip. Tropical Nursing	1
Counselling in Nursing	1	
Plastic Surgery & Burns Course	1	
Academic Programs	AND, BN/MA Papers, DipSocSci (Midwifery), PGDipNurs	9
Non Nursing	Computer Diploma; Diploma in Agronomy, Diploma in Administration, B.Sc. (Hons), BA (Sociology/Criminology) & (Psychology), Pathology Assistant	8
Teaching	Teaching Course, CAT, Cert. Clinical Teaching, Dip. Teaching & Supervision, ENB 998/136	8

\* some hold multiple post registration qualifications

Out of 164 respondents, 59 (36%) stated that they held a post registration qualification. Ten participants (17% n=59) had two further qualifications and six (12%) had completed three further qualifications. One respondent had completed five further qualifications since registration. There were over thirty different qualifications mentioned in this section of the questionnaire (Table 8.). The majority of these qualifications were speciality area programmes related to specific work settings, e.g. Paediatric, Intensive or Cardiac Care courses. Academic programmes leading to a higher degree in nursing/midwifery, e.g. a Master's degree or a Post Graduate Diploma in Applied Science were other further nursing educational credentials mentioned. Eight nominations were non nursing,

including qualification in the field of administration, agronomy, computing, sociology and psychology. The same number ( $n = 8$ ) of participants indicated to have a teaching qualification, several of them in the area of adult education and/or clinical teaching.

#### 4. 2. 4. Reading Frequency

The responses to the question about how often subjects read research articles are depicted in Table 9.. Participants were not asked to state specific titles of nursing journals they were reading.

**Table 9 : Frequency of Reading Professional Research Publications**

Basic Qualification Type	Once a week	Once a month	Once every three months	Less than every three months	never	
Hospital Trained	9	20	12	3	1	45
Comprehensive Diploma	6	19	11	17	4	57
Degree Program		36	14	8	3	61
Total	15	75	37	28	8	163
Missing						1

More than half of the respondents indicated that they read research publications at least monthly, and only 8 (4.9%) stated to never have read any research reports.

#### 4. 3. The BARRIER's Scale

##### 4. 3. 1. Instrument Reliability

The Cronbach's Alpha index measures the internal consistency reliability of a research instrument, which indicates the extent to which all items on a scale are measuring the same underlying construct. Indexes of internal consistency range in their value from 0.00 for complete inconsistency to 1.00 demonstrating highest accuracy in measurement. (Polit, 1996). The instrument used in this replication study demonstrated a moderate to strong reliability measured by Cronbach's Alpha in previously reported studies (Funk et al., 1991a; Dunn et al., 1997; Nilsson Kajermo et

al. 1998). Table 10. compares these other results with the reliability tests from this study sample for the sub scales and the overall instrument with its 28 items.

**Table 10 : Cronbach's Alpha Coefficients across Studies**

	<b>28-Item Sub Scales:</b>				
	<b>Scale</b>	<b>Individual</b>	<b>Organisation</b>	<b>Research</b>	<b>Communication</b>
<b>This Study</b>	<b>.91</b>	<b>.87</b>	<b>.78</b>	<b>.83</b>	<b>.73</b>
Funk et al. (1991a)		.80	.80	.72	.62
Dunn et al. (1997)		.78	.77	.67	.48
Kajermo et al. (1998)		.81	.87	.86	.83

#### 4. 3. 2. Item and Sub Scale Scores

Table 11. Shows the mean item scores for the four sub scales.

**Table 11: Means and Standard Deviation for the four Sub Scales**

<b>Sub Scale</b>	<b>Mean (SD)</b>
Characteristics of the individual	1.80(.63)
Characteristics of the organisation	2.70(.53)
Characteristics of the research	2.30(.54)
Characteristics of the communication	2.48(.53)

The mean item scores are shown in Table 12. Apart from item 20, all items with a mean of greater than 2.25 corresponded with more than 40 % of the participants perceiving the individual items as a moderate to great barrier to their use of research as depicted in Table 13. The three barriers perceived as the biggest barriers ranking 1st to 3rd had the highest item mean values at 3.21, 3.02 and 2.81. The barriers in the five lowest ranks had also the smallest overall item means from 1.52 to 1.82.

**Table 12: Means and Standard Deviations of all BARRIER's scale items**

Item Number/Phrasing	Mean	SD
1. Lack of awareness	1.94	.83
2. Being isolated from knowledgeable colleagues with whom to discuss research	2.10	.90
3. Not feeling capable of evaluating the quality of research	2.26	.92
4. Feeling the benefit for practice will be minimal	1.84	.87
5. Seeing little benefit for self	1.68	.86
6. Unwillingness to change/try new ideas	1.52	.87
7. Not perceiving the need to change practice	1.52	.85
8. Not seeing the value of research for practice	1.53	.85
9. Insufficient authority to change patient care procedures	2.61	.96
10. Insufficient time on the job to implement new ideas	3.21	.84
11. Physicians not co-operating with new implementation	2.81	.86
12. Administration not allowing implementation	2.51	.93
13. Other staff not being supportive of implementation	2.46	.82
14. Research results are not generalizable to own setting	2.38	.74
15. Inadequate facilities for implementation	2.52	.70
16. Insufficient time to read	3.02	.83
17. Research has not been replicated	2.35	.72
18. Uncertainty about the believability of the results of the research	2.21	.73
19. Literature reports conflicting results	2.48	.77
20. Methodological inadequacies of the research	2.34	.70
21. Research articles/reports are not published fast enough	2.17	.76
22. Conclusions drawn from the report are not justified	2.15	.70
23. Statistical analysis are not understandable	2.54	.80
24. The relevant literature is not compiled in one place	2.59	.80
25. Implications for practice are not made clear	2.44	.75
26. Research reports are not readily available	2.62	.76
27. Research is not reported clearly and readably	2.60	.81
28. Research is not relevant to nurse's practice	2.09	.91

#### 4. 3. 2. Item Rankings

The 28 items from the research utilisation questionnaire have been ranked according to the cumulative percentage of respondents that indicated their perception of the item as a moderate to great barrier to the



use of research in clinical practice. Table 13. shows the ranking of items from this study in comparison with the ranking results of the previous studies by Funk et al. (1991a), Dunn et al. (1997); and Nilsson Kajermo et al. (1998). The items are ranked in descending order, showing the item number according to their listing on the questionnaire (Appendix 2) with the cumulative percentage of responses perceiving the item as a moderate to great barrier.

**Table 13 : Comparison of Ranking of BARRIER's Scale Items**

Rank	Funk et al. (1991a)	Dunn et al. (1997)	Nilsson Kajermo et al. (1998)	This Study
1	9/75.2	10/74.8	26/78	10/80.6
2	10/75.1	23/74.7	15/77	16/77
3	1/74.7	11/71.5	2/76	11/66.9
4	11/71.2	3/69.9	16/72	26/55.6
5	12/70.6	24/69.6	10/72	9/58.1
6	13/70.5	15/67.8	9/64	27/54.7
7	14/68.3	27/67.1	25/64	24/54.4
8	15/67.9	16/66.9	24/58	15/52.2
9	23/67.8	1/66.6	Language 54.0	12/50.9
10	16/67.2	Amount 65.5	23/48	23/48.8
11	2/65.2	17/61.4	14/45	13/47.8
12	24/63.1	13/60.5	27/42	14/46.4
13	25/61.5	14/58.6	11/41	19/45.9
14	3/59.3	9/58.1	1/40	25/44.4
15	17/56.1	25/54.8	3/35	17/41.3
16	27/53.6	19/52.7	13/35	3/39.9
17	28/53.5	20/51.8	5/33	20/36.9
18	4/51.8	18/50.7	7/33	28/32.9
19	5/46.5	12/50.2	21/29	18/31.6
20	18/43.9	2/49.7	8/27	21/31.2
21	6/43.3	21/44.8	17/26	2/30.4
22	19/38.7	26/44.6	6/24	22/25.5
23	20/36.2	6/42	28/23	1/23.1
24	7/35.2	22/37.7	18/23	4/19.9
25	8/34.6	4/37.1	4/21	5/14.9
26	21/33.3	28/36	19/19	8/14.3
27	22/19.6	7/33.9	12/16	7/13.0
28	26	5/33.3	20/11	6/12.5
29		8/22.7	22/04	

Colour code for sub scales grouping of items:

Individual: Item 1-8	Organisation: Item 9-16	Research: Item 17-22	Communication: Item 23-28	Extra item/no value
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The three barriers ranked highest are all from the sub scale that is concerned with the 'characteristics of the organisation'. Eighty one percent (n= 132) of the nurses considered 'insufficient time on the job to implement new ideas' to be a moderate to great barrier. This item leads the list of barriers to research use but is closely followed by 'insufficient time to read research', and 'physicians not co-operating with implementation'. Nine items are perceived by 50 or more percent of the respondents to be a moderate to great barrier to research utilisation.

Six of the ten highest scoring items in the list of barriers to research utilisation are from the 'characteristics of the organisation' sub scale. All of the eight items of that sub scale are included within the twelve highest rankings. The items of the 'characteristics of the organisation' sub scale also scored highly across previous international studies that have used the research utilisation questionnaire. In the clinician sample of Funk et al. (1995) all of the eight items in the 'characteristics of the organisation' sub scale scored amongst the ten highest. 'Insufficient time on the job to implement new ideas' was listed within the first five overall ranks in all of the studies compared. One difference regarding this sub scale to the results reported here was the ranking of the barrier 'administration not allowing implementation'. This item ranked ninth in this study and fifth in Funk et al.'s (1991a) study. Whereas it had been perceived as a much lesser barrier amongst the other studies previously conducted.

All the items of the 'characteristics of the individual' sub scale ranked in the lower half of the item ranking list for this study. 'Not feeling capable of evaluating the quality of the research' ranked highest from this sub scale with 39.9% (n= 65) of respondents still finding it a moderate to great barrier. The compared BARRIER's scale studies all have one item of the 'characteristics of the individual' sub scale within their five highest overall ranks. Between two and six items of this sub scale were perceived as a moderate to great barrier by more than 40% of the participants in these previous studies.

#### 4. 4. Additional Barriers

Sixty-one participants (37%) listed one or more additional barriers in the space provided at the end of the questionnaire. The different statements on further barriers were then reviewed for their thematic fit with the current 28 items of the BARRIER's scale. The majority of the statements were close to the wording of some of the original questionnaire items, however, some barriers were identified that could be incorporated as new items if Funk et al's. (1991a) instrument were revised. Table 14. Gives an overview on statements made regarding additional barriers to use of research in clinical practice.

The additional barrier most often mentioned was 'lack of time', and this was suggested by 21 participants. Lack of time was sometimes worded implicitly: *'main factor for me: time'* (062); and often as a consequence of under staffing and/or otherwise heavy workloads: *'not enough time to take all research in because of short staffing'* (126). The issue of low staff numbers was raised by seven of the participants, especially a lack of senior staff and a high number of casual staff being perceived as a barrier. Another barrier mentioned by five different respondents was the lack of resources which included funding for the implementation stage of the research utilisation process.

Accessibility of research reports was another barrier mentioned in some form by seven participants. A major hindrance seems to lay in the service hours of the hospital's nursing library that does not facilitate a visit for shift workers. One respondent noted: *'difficult access to nursing journals, i.e. I do permanent night duties and do not live close to the hospital - [journals are] not easily available on the ward, cannot borrow from library and high cost to subscribe myself'* (045). Several respondents thought that the unavailability of specific professional speciality journals on the ward was a barrier.

**Table 14:** Additional barriers to research utilisation in clinical nursing practice

Cluster Themes	Quotes (Code Number)
Organisational Structure & Resources	<ul style="list-style-type: none"> <li>• Administration is a big one. To change policy is a huge issue (002).</li> <li>• Money to implement change (038).</li> <li>• Resources (material, finance,...) (043).</li> <li>• The work environment with rotating shifts makes it difficult to discuss and apply research to practice (091).</li> <li>• Doctors will not change even if research shows clearly that change is needed, e.g. dressing of wounds (095).</li> <li>• Funding (144).</li> <li>• I think research is talked about within our organisation but a lot of it is lip service and inadequate amounts of nurses are researchers, yet we hear 'evidence based' ad infinitum...(160).</li> </ul>
Time	<ul style="list-style-type: none"> <li>• Mostly time is the biggest barrier (017).</li> <li>• Very seldom time at work (026).</li> <li>• Main factor for me: time (062).</li> <li>• Not enough time to take all research in because of short staffing (126).</li> <li>• We have major time constraints. It is hard enough to do the basics without searching for research articles. Just procuring articles that were pertinent to study [further education] took hours... (129).</li> <li>• Lack of time to read and implement new ideas (151).</li> <li>• Time: we have a life outside the hospital that should be 'ours' and not tied up with work topics (155).</li> </ul>
Access/availability of research reports	<ul style="list-style-type: none"> <li>• Research reports not accessible on the ward (046).</li> <li>• Library is not always accessible (061).</li> <li>• Research articles in library which is quite a distance from the unit (145).</li> </ul>
Culture	<ul style="list-style-type: none"> <li>• Changing the culture of the unit for some people to make research seem like a good thing rather than it being 'more work' (005).</li> <li>• Lack of research relevant to the population we nurse in New Zealand (052).</li> <li>• Political correctness can be a barrier: seen to do the 'right' thing whether or not it is actually appropriate (087).</li> <li>• Often research generated in other countries (137).</li> <li>• Principles of the treaty [of Waitangi] could prove to be a problem or make the research more time consuming, but depends on the type of research undertaken (147).</li> </ul>
Other/Miscellaneous	<ul style="list-style-type: none"> <li>• Nurses who hold negative attitudes toward professional development (020).</li> <li>• General feeling of apathy and dissatisfaction (085).</li> <li>• Research done is not relevant to clinical practice: done for the benefit of the researcher (101).</li> </ul>

As reported in the methodology and procedure chapter, the open ended question about additional barriers and facilitators included the statement 'for example cultural matters' because nothing in this regard is stated explicitly within the 28 items of Funk's et al. (1991a) questionnaire. Cultural matters, however, are important throughout the context of work and life in New Zealand, because of the bicultural emphasis in its social structure. Eight participants responded to this prompt. Three respondents saw the 'culture' in their respective work area as a barrier, because it was either that there is '*no unit culture*' (153) or that it was seen as lack of support, e.g. '*culture of the unit is to maintain status quo. Lack of ward meetings and no encouragement of culture from management*' (072). Whereas one participant stated '*cultural matters are moderate barriers for me*' (054) another felt '*cultural isolation at times*' (109) without elaborating on this any further. Two respondents mentioned the possibility of a barrier because of the Treaty of Waitangi or some other law: '*with the change of the law now it will be harder to implement change and research if Maori don't consider it beneficial for Maori*' (057). Further comments were made regarding barriers that most research is carried out overseas and, therefore, the results are not perceived to be relevant to the New Zealand nursing context.

#### **4. 5. Facilitators of Research Utilisation**

Sixty-eight (41%) of the respondents stated their opinion on what they feel could facilitate their use of research in clinical practice. Again, these statements were reviewed to determine 'thematic fit' with the barriers itemised in the BARRIER's scale questionnaire and an overview on statements made is given in Table 16.

As with the additionally mentioned barriers, the issue seen frequently as a facilitator by most participants was time. This facilitator was suggested on 22 of the returned questionnaires. A factor suggested to be supportive of research use was having designated time periods during ordinary working time, to visit the library, or read and discuss research

reports with peers. Four respondents suggested that an increase in study days could facilitate research utilisation. One participant was of the opinion that *'more education to help in motivation of staff members'* (127) would facilitate the utilisation of research. Four participants mentioned that having a nursing research department or designated research nurse for their area would be another organisational facilitator. One respondent wrote in this regard that a *'research nurse allocated to areas to show/assist breakdown of articles and using a valid time frame to introduce new practice'* (035) would be beneficial. Apart from resources and a generally supportive working environment, that were also listed, *'financial recognition for more educational qualification and research'* (078), was another issue mentioned.

Support for research use in various forms from key people was suggested fourteen times. The people most often seen to be in a facilitating role in terms of research utilisation are clinical nurse educators and clinical nurse specialists. One participant saw their role as in *'having [a] clinical nurse educator introduce new research based ideas and assist staff to understand and implement them'* (136). Support from nursing management was stated four times to be a facilitating mechanism. This mechanism could be seen as *'direction and guidance from senior staff and team leaders'* (011). Other respondents mentioned a clinical co-ordinator who is specialised in research, support from other staff, and general role models as facilitating the use of research in clinical nursing practice.

Within the thematic domain of the communication sub scale, 11% (n=18) of statements were made regarding the library service and the availability of professional journals. Table 15. displays these statements in descending order of the frequency they have been mentioned.

**Table 15: Statements on Library Services/Journal Access/Availability**

<b>Statement:</b>	<b>n=61</b>
Journals available on the ward	*7
Journal clubs or research review groups	6
Access to library (after hours)	2
Internet access on ward	2
More equipped library	1
Possibility to order articles from library	1

\* multiple statements per respondent possible

**Table 16: Overview on facilitators to research utilisation in clinical practice**

Cluster Themes	Quotes (Code Number)
Time	<ul style="list-style-type: none"> <li>• Given more time to research during working time (017).</li> <li>• Designated time per month for staff to review magazines and research articles at work area not just the library (026).</li> <li>• Time (uninterrupted by work) for discussion of relevant research to ward (045).</li> <li>• Study time to use library (151).</li> </ul>
Supportive resources within the organisation	<ul style="list-style-type: none"> <li>• Direction and guidance from senior staff and team leaders (011).</li> <li>• A CNS who is responsible for [collation of] up to date research and facilitation with colleagues (015).</li> <li>• Research nurse in every area (032).</li> <li>• Research nurse allocated to areas assisting with breakdown of articles and using valid time frames to introduce new practices (035).</li> <li>• Nursing research department in the organisation (043).</li> <li>• Someone investigating and collecting relevant information for your interest (087).</li> <li>• Initiative research team could incorporate work site nursing personnel so that they could participate and select meaningful areas for clinical research (109).</li> <li>• Support from management incl. Charge nurse etc. (119).</li> <li>• Having clinical nurse educators introduce new research based ideas and assist staff to understand and implement them. (136).</li> <li>• Paid research days (141).</li> </ul>
Attitudes in environment	<ul style="list-style-type: none"> <li>• Encouragement/support from nursing management (020).</li> <li>• Attitudinal change in nurses (032).</li> <li>• Developing a work place culture that encourages inquiry (033).</li> <li>• Motivated team leader (052).</li> <li>• Working in an area that frequently makes change. Open minded people (080).</li> <li>• Like minded people and staff working with a good nurse educator who shows enthusiasm for new ideas (118).</li> <li>• More education to help in motivation of staff members (127).</li> </ul>

One participant suggested as a facilitator '*developing a work place culture that encourages inquiry*' (033) is important. There was no mention of any cultural facilitators, but one respondent stated that '*comparison with Australian hospitals/universities who have and are doing similar [research?], especially looking at Aboriginal culture and health and comparing it to Maori.*' (057) could be beneficial.

## 4. 6. Inferential Statistics

### 4. 6. 1. Non Parametric Results

Female and males respondents differed on only three items from the overall 28 item questionnaire (Table 17.). There were no significant differences on any of the four sub scales.

**Table 17 :** Mann- Whitney -U (MWU) Statistics for Gender Comparison

Item Variable	Gender	Mean Rank	MWU*
'Seeing little benefit for self':	Female	80.08	471
	Male	111.40	
'Other staff not being supportive of implementation':	Female	80.24	496
	Male	108.90	
'Uncertainty about the believability of the results':	Female	78.61	467
	Male	108.80	

\* Statistically Significant at  $p < 0.05$  level

The three categories of designation, however, differed significantly for the mean ranks of the 'organisational' sub scale (Table 18.). One item of this sub scale showed significant differences at the .000 level.

**Table 18 :** Kruskal Wallis Statistics for Designation Comparison

Variable/Designation	Mean Rank	Chi Square (Asyp.Sig.)*
'Methodological inadequacies of the research': Staff Nurse/Midwife (n=139) Charge Nurse/Team Leader (n=11) CNS/Nurse Educator (n=9)	77.22	6.266 (0.044)
	90.09	
	110.67	
'Insufficient authority to change patient care procedures': Staff Nurse/Midwife (n=142) Charge Nurse/Team Leader (n=11) CNS/Nurse Educator (n=9)	87.21	18.888 (0.000)
	38.45	
	44.00	
Organisation Sub Scale: Staff Nurse/Midwife (n=138) Charge Nurse/Team Leader (n=11) CNS/Nurse Educator (n=9)	81.07	6.362 (0.044)
	46.33	
	60.63	

\* Statistically Significant at  $p < 0.05$  level

### 4. 6. 2. Independent Sample T-Tests

Participation in a research project did not have any statistically significant impact on participants' scores in respect to the sub scales (Table 19.). However, the sample differed in the means of the



'characteristic of the individual' sub scale in regards to the availability of a research module. Participants (n=76) who had a research module in their basic education, had a mean of 1.94 (SD .68) and non recipients (n=81) had a mean of 1.68 (SD .56) on this sub scale (Table 20.).

**Table 19 : t-test Statistic 'Research Participation'**

	Have you ever participated in a research project?	Mean	Std. Deviation
Individual Sub scale	Yes (n=91)	1.7418	.6308
	No (n=69)	1.8750	.6235
Organisation Sub scale	Yes (n=89)	2.6643	.6017
	No (n=66)	2.7462	.4067
Research Sub scale	Yes (n=83)	2.2912	.5026
	No (n=64)	2.3151	.5947
Communication Sub scale	Yes (n=93)	2.4355	.5311
	No (n=69)	2.5459	.5223

**Table 20: t-test Statistic 'Availability of Research Module in Basic Education'**

Independent Samples Test

		Levene's test for equality of variance		t-test for equality of means		
		F	Sig.	t	df	Sig.
Individual Sub scale	Equal variances assumed	1.889	.171	2.632	155	<b>*.009</b>
	Equal variance not assumed			2.615	145.146	<b>*.010</b>
Organisation Sub scale	Equal variances assumed	4.267	.041	1.714	150	.089
	Equal variance not assumed			1.714	142.649	.089
Research Sub scale	Equal variances assumed	.844	.360	-.047	143	.962
	Equal variance not assumed			-.047	142.876	.962
Communication Sub scale	Equal variances assumed	.057	.812	.548	157	.584
	Equal variance not assumed			.548	156.738	.584

\* Statistically Significant at p< 0.05 level

#### 4. 6. 3. One Way Analysis of Variance

The ANOVA statistics for the groups of the 'basic qualification types', i.e. hospital trained, Polytechnic Diploma and/or Bachelor Degree, produced a statistically significant result in the organisational sub scale (Table 21.). A Bonferroni post hoc test outlines the difference to be

between hospital trained nurses and the participant with a degree education. Hospital trained nurses perceived the organisational characteristics as a lesser barrier with a sub scale mean of 2.57 compared to a mean of 2.83 by the degree educated group. The largest differences in mean scores was on item 10 and item 16, respectively. There were no statistically significant results for ANOVA's associated with age groups, registration groups ,or the 'reading frequency' groups.

**Table 21 : ANOVA for Basic Qualification Type**

		Sum of Squares	df	Mean Square	F	Sig.
Individual Sub scale	Between Groups	1.642	2	.821	2.093	.127
	Within Groups	61.596	157	.392		
	Total	63.238	159			
Organisation Sub scale	Between Groups	1.811	2	.905	3.327	*.039
	Within Groups	41.354	152	.272		
	Total	43.165	154			
Research Sub scale	Between Groups	1.518E-02	2	7.592E-03	.025	.975
	Within Groups	42.981	144	.298		
	Total	42.997	146			
Communication Sub scale	Between Groups	6.498E-02	2	3.249E-02	.116	.891
	Within Groups	44.539	159	.280		
	Total	44.604	161			

\* Statistically Significant at the  $p < 0.05$  level

#### 4. 6. 4. Correlation

Spearman's rank order correlation co-efficient for the 'reading frequency' variable showed two correlation, which were significant at the .001 (2 tailed) level. That is, both, 'participation in a research project' and the 'individual' sub scale means were positively correlated. Results of the Pearsons product correlation co -efficient for the four sub scales are shown below in Table 22.

**Table 22 : Pearson's Product Correlation**

		Sub scale 1	Sub scale 2	Sub scale 3	Sub scale 4
Individual Sub scale (1)	Pearson Correlation	1.000	.476	.417	.537
	N	161	153	145	160
Organisation Sub scale (2)	Pearson Correlation	.476	1.000	.420	.472
	N	153	156	144	155
Research Sub scale (3)	Pearson Correlation	.417	.420	1.000	.591
	N	145	144	148	148
Communication Sub scale (4)	Pearson Correlation	.537	.472	.591	1.000
	N	160	155	148	163

All correlations are significant at the 0.01 level (2-tailed).

#### 4. 7. Factor Analysis

Factor analysis is a statistical method of data reduction that permits compounding a large number of variables together in matrix order, e.g. the twenty-eight items of the BARRIER's scale, are collapsed as a set of factors according to the interrelationship among these variables (Kim & Mueller, 1978a).

Factor analysis in this study was performed as matter of interest to determine if possible differences with the New Zealand sample, that might arise from a cultural difference, could be detected. Such a comparison on factor solutions among different studies would benefit from a confirmatory factor analysis. Being a highly complex algebraic endeavour, confirmatory factor analysis requires computer program facilities, i.e. LISREL, that are beyond the capacity of the SPSS package used in this study (Child, 1990; Long, 1983; Kline, 1994).

Nevertheless, Kim and Miller (1978b) state that confirmatory factor analysis, a method used to test the adequacy of a model, requires as a minimum only to hypothesise the numbers of factors to be extracted. Therefore, the statistical procedures used with this data were the same as for any exploratory factor analysis situation. Firstly, a four factor estimation was applied which enabled confirmatory comment regarding the underlying model proposed by Funk et al. (1991a). Based on some specific statistical

reasoning, which will be further outlined in the relevant section, a second three factor solution was produced. These solutions are both presented in turn.

#### **4. 7. 1. Four Factor Solution**

A factor analysis was conducted to confirm of the factor model put forward by Funk et al. (1991a). The results of this factor analysis are compared with Funk et al.'s (1991a) result. A further, three factor solution was also examined for its fit with the data and is presented thereafter.

Using the software package SPSS version 9.0, the computed Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was .855 and the Bartlett's test of sphericity had a significance level of  $< .000$ . These two measures are used to indicate the suitability of the data for factor analysis. KMO measurements above .5 and a Bartlett's significance level of less than .05 indicate strongly that there are probably significant relationships among the variables, or underlying factors respectively (Francis, 1999).

The method for factor extraction used was principal component analysis with Varimax rotation. The numbers of factors to be rotated has been fixed to four, although six possible factors had an Eigenvalue of  $> 1$ . Known as the Kaiser criterion, it is common to use the initial Eigenvalues  $> 1$  to determine the factors to be retained and rotated (Child, 1990). However, there are other criteria that could facilitate this decision. For example one could retain all the factors that account for 5% or more of the total variance (Polit, 1996). In fact, only four factors fulfilled this requirement in this analysis, accounting for 52.79 % of the total variance. Items with a factor loading of  $> .40$ , a parameter level set as well by Funk et al. (1991a), were retained on each factor (Table 23.).

Two items did not load on any factor under the described conditions. One was 'being isolated from knowledgeable colleagues with whom to discuss research' which loaded .396 on Factor 1 and .393 on Factor 3 and therefore was under the  $> .4$  mark. The other item was 'research results are

not generalisable to own setting' which had a loading of .372 on Factor 3 only.

All other items from the original 'characteristics of the individual' sub scale loaded on one factor in this analysis. The pivotal item of this factor, loading at .872, is 'not perceiving the need to change practice'. In addition, the item 'research is not relevant to nurse's practice' also loaded on this factor. The item 'implications for practice are not made clear' cross loaded on three factors, and had it's lowest loading of .405 on Factor 1.

All six items of the 'characteristics of the research' sub scale loaded on Factor 2. The pivotal item in this factor is 'methodological inadequacies of the research' with a loading of .859. 'Research has not been replicated' cross loaded on Factor 3 where it had a higher loading at .454. The item 'research is not reported clearly and readably' also cross loaded and it's highest loading was on Factor 2.

Factor 3 closely resembles the 'characteristic of the organisation' sub scale. The aforementioned item 'research results are not generalizable to own setting', belonging to the original sub scale, did not load on any factor over the .4 level. Six of the other items had a loading from .435 to .793, the highest loading for the item 'administration not allowing implementation'.

The last of the factors that was anticipated to load with the 'characteristics of the communication' items, has the most dispersed results. Only four of the original sub scale items loaded on the factor and, as previously mentioned, one of them had a higher loading on Factor 2. The highest loading on this factor was from the item 'insufficient time to read' at .714. This pivotal item for the computed Factor 4 was not an item from the original barrier sub scale of the 'characteristics of the communication'.

**Table 23 : Four Factor Solution**

## Rotated Component Matrix

Item	Factor 1	Factor 2	Factor 3	Factor 4
1.Lack of awareness	.592			
2.Being isolated from knowledgeable colleagues with whom to discuss research	[.396]		[.393]	
3.Not feeling capable of evaluating the quality of research	.518			
4.Feeling the benefit for practice will be minimal	.660			
5.Seeing little benefit for self	.718			
6. Unwillingness to change/try new ideas	.817			
7.Not perceiving the need to change practice	.873			
8.Not seeing the value of research for practice	.840			
9.Insufficient authority to change patient care procedures			.729	
10.Insufficient time on the job to implement new ideas			.435	
11.Physicians not co-operating with new implementation			.743	
12.Administration not allowing implementation			.793	
13.Other staff not being supportive of implementation			.673	
14.Research results are not generalizable to own setting			[.372]	
15.Inadequate facilities for implementation			.532	
16.Insufficient time to read				.714
17.Research has not been replicated		.403	.454	
18.Uncertainty about the believability of the results of the research		.702		
19.Literature reports conflicting results		.720		
20.Methodological inadequacies of the research		.859		
21.Research articles/reports are not published fast enough		.557		
22.Conclusions drawn from the report are not justified		.820		
23.Statistical analysis are not understandable				.591
24.The relevant literature is not compiled in one place				.521
25.Implications for practice are not made clear	.405	.409		.433
26.Research reports are not readily available			.492	
27.Research is not reported clearly and readably		.494		.489
28.Research is not relevant to nurse's practice	.499			

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalisation. a Rotation converged in 7 iterations.

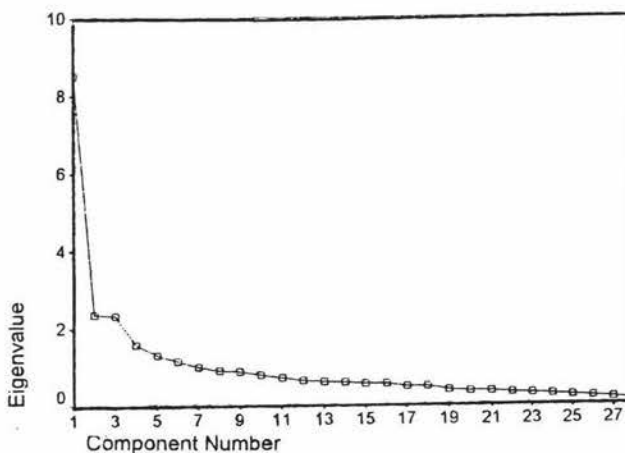
The Cronbach's alpha measure associated with the factored scales was only slightly different from the previous one reported with .90 for the overall instrument and .87 for the 'characteristics of the individual sub scale. The organisational and research sub scales both recorded an alpha of .83. The 'characteristic of the communication' sub scale performed more poorly with an alpha of .55 for the factor.

#### 4. 7. 2. The Three Factor Solution

As mentioned in the previous section relating to the four factor solution, there are different criteria to decide on how many factors to retain and rotate for a final factor solution. The choice of a particular criteria seems to be based only to a minor degree on mathematical justifications (Child, 1990). Cattell (1965, cited in Kim & Mueller, 1978b) advocated the use of the scree test. The Eigenvalues for the factors get plotted successively (Figure 1.) and one looks for a change in the slope from its initial steep descent (Polit, 1996).

With this study's data, the curve on the scree plot straightens out from factor four onwards. Therefore, according to the scree test, the first three factors were retained and rotated (Table 24.). Furthermore, this three factor model does fit the 'postulate of parsimony' theory explained by Kim and Mueller (1978a) which is a stipulation that considers the simpler model as true, 'given two or more equally compatible models for the given data' (p.79).

**Figure 1. : Scree Plot**



Two items from the original scale did not load on any of the three factors over the .400 level: 'Research results are not generalizable to own setting' and 'Insufficient time to read'. The first former item had the second highest non response rate. 3.7% (n= 6) of participants leaving it blank, and it ranked 12th (refer to Table 10., p. 8). 'Insufficient time to read' was the item ranking second in terms of respondents considering it a moderate or great barrier to research utilisation.

**Table 24: Three Factor Solution**

Item	Factor1	Factor2	Factor3
1.Lack of awareness	.592		
2.Being isolated from knowledgeable colleagues with whom to discuss research	.405		
3.Not feeling capable of evaluating the quality of research	.516		
4.Feeling the benefit for practice will be minimal	.664		
5.Seeing little benefit for self	.723		
6.Unwillingness to change/try new ideas	.816		
7.Not perceiving the need to change practice	.871		
8.Not seeing the value of research for practice	.841		
9.Insufficient authority to change patient care procedures			.735
10.Insufficient time on the job to implement new ideas			.514
11.Physicians not co-operating with new implementation			.738
12.Administration not allowing implementation			.729
13.Other staff not being supportive of implementation			.621
14.Research results are not generalizable to own setting			
15.Inadequate facilities for implementation			.545
16.Insufficient time to read			
17.Research has not been replicated		.410	.445
18.Uncertainty about the believability of the results of the research		.720	
19.Literature reports conflicting results		.712	
20.Methodological inadequacies of the research		.850	
21.Research articles/reports are not published fast enough		.543	
22.Conclusions drawn from the report are not justified		.803	
23.Statistical analysis are not understandable		.526	
24.The relevant literature is not compiled in one place			.400
25.Implications for practice are not made clear		.500	
26.Research reports are not readily available			.549
27.Research is not reported clearly and readably		.593	
28.Research is not relevant to nurse's practice	.492		

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalisation. a) Rotated converged in 5 iterations.



Because of the resemblance to the original sub scales, it seems not necessary to make any changes to Funk et al.'s (1991a) label. All eight items of the 'characteristics of the individual' loaded with .871 to .405 on one factor, together with the item 'research is not relevant to nurse's practice'.

Apart from the two items reported as not loading on any factor, the six remaining items from the 'characteristics of the organisation' sub scale loaded .738 to .514 on the third factor. This factor included 'research reports are not readily available' and 'the literature is not compiled in one place' from the original weak communication sub scale. 'Research has not been replicated' cross loaded on Factor 2 and 3 over the .400 cut off.

The six items from the research sub scale also loaded on only one factor. Three items from the previous communication sub scale, i.e 'statistical analysis are not clear', 'implications for practice are not made clear' and 'research is not reported clearly and readably', loaded .593 to .500 on the new research characteristics factor.

The Cronbach's alphas for the items factored into three sub scales this way was .91 for the overall scale, .87, .82 and .85 for the individual, organisation and research sub scale. The three factors accounted for 47% of the total variance.

#### **4. 8. Summary**

This chapter reported the data generated by 164 returned questionnaires including demographic variables and the BARRIER's scale. Some results that are of interest and/or concern within the issue of research use in clinical practice of this sample of New Zealand nurses are:

- The number of respondents having had post registration professional education, often including a research module.
- The barriers to research use as measured by the BARRIER's scale instrument ranking highest in terms of respondents perceiving the item as a moderate or great barrier being from the two sub scales

'characteristics of the organisation' and 'characteristics of the communication'.

- The two biggest barriers being 'time on the job to implement new ideas' and 'time to read', and the mentioning of 'time' as a relevant factor in terms of a barrier to and as a facilitator of research use in general.
- The relevance of good access to library services and journal availability.
- The significant differences in the perception of barriers amongst the sub groups of the sample.

Additionally, the results from the psychometric evaluation of the research instrument used, including the findings of two factor analyses are worth some further discussion. In the next chapter, these findings will be critically analysed and discussed in the context of the theoretical framework and the reviewed literature. Recommendations for future research and the implications for clinical nursing practice will be considered. The limitations of the study will also be discussed.

## Chapter 5:

### Discussion

The main aim of this study was to assess the perceived barriers to and facilitators of research use in clinical practice, as measured by the BARRIER's scale (Funk et al., 1991a), in a sample of New Zealand registered nurses and midwives. The results of the study lend themselves to comparison with other international studies investigating research utilisation in nursing practice. The results will be discussed in relation to these studies, the theoretical framework underlying the research tool and the reviewed literature on research utilisation in general. Furthermore, the research instrument used in this study will be discussed based on the results of the two factor analyses performed. The limitations of the study will be related to the context of the social/cultural differences and the research methodology utilised. Recommendations for further studies and the implications of the results for clinical practice are discussed.

The research question that will be answered in the following discussion is:

- What are the most frequent barriers to and facilitators of research use in clinical practice stated by a sample of New Zealand nurses and midwives as measured by the BARRIER's scale?

The discussion will address the aims of the study stated in Chapter One which are reproduced here:

- The assessment of the barriers to and the facilitators of research use in clinical practice of the study sample.
- The comparison with international studies using the same research instrument, and
- The evaluation of the BARRIER's scale questionnaire psychometric characteristics with a culturally different population.

## **5. 1. Barriers to and Facilitators of Research Use in Clinical Practice**

The first aim of this study was to assess the barriers to and facilitators of research use in clinical practice of a sample of New Zealand nurses and midwives (n=164) as measured by the BARRIER's scale questionnaire.

The questionnaire items have been hierarchically ranked, according to the number of respondents perceiving any specific item as a moderate or great barrier to their use of research in clinical practice. This revealed several interesting results. Firstly, the items ranking in the top ten barriers were from only two sub scales of the research instrument, i.e. 'characteristics of the organisation' and 'characteristics of the communication'. Nine of these barriers were a moderate to great barrier for more than 50% of the sample. In contrast, apart from 'being isolated from knowledgeable colleagues with whom to discuss research' all items from the 'characteristics of the individual' sub scale were perceived by less than a third of the sample as a moderate to great barrier and were in the bottom eight rankings.

The ranking results will be discussed in more detail within specific areas that arise from the sub scale groups. These areas deal with the barriers on the level of the individual or the organisation, and the barriers within the domain of the research. The discussion of additional barriers and facilitators mentioned in the open ended questions within the research instrument is included.

### **5. 1. 1. Individual Barriers and Facilitators**

Factors pertaining to the individual nurse/midwife and organisational factors are both discussed in the literature in relation to research utilisation (e.g. Hefferin et al., 1982; Champion & Leach, 1989; Barriball et al., 1992; Stetler, 1994). The fact that this study's sample perceives individual characteristics as much less of a barrier than organisational characteristics might be a reflection of their educational background. That is, the majority

of the participants had received their basic nursing education at a tertiary institution or pursued post registration higher education, including a research module.

Bostrom et al. (1989), Harrison et al. (1991) and Pond and Bradshaw (1996) have all suggested that education has an impact on attitude toward research, respectively the level of awareness, skill and knowledge of research. In this study, a higher number (37.2%) than the national average (7.1%, Nursing Council, 2000a) indicated that their basic education was at degree level. Therefore, the majority (67%) of respondents in this study, including the ones who indicated their highest post basic nursing qualification to be at degree level (n = 49), had some form of research education during their education.

It is argued then, that in this study's sample, educational preparation in research has decreased the level of personal barriers to research use, e.g. 'lack of awareness'. Furthermore, it is argued that a higher level of educational preparation influenced respondents' attitude and beliefs positively, i.e. to see the benefit for themselves, the need to change practice or the value of research to their clinical practice. The likeliness of a generally positive attitude towards research is further supported by the fact that the majority of respondents (54.8%) indicated that they read at least once a month professional publications that report research results.

Fifty nine respondents (36%) indicated to have at least one additional qualification after their basic nursing/midwifery education. The majority of these qualifications (Table 8) are directly related to nursing or midwifery practice. One goal of continuing education, according to Barriball et al. (1992), is to increase the research utilisation capability of individuals that attend the further professional education courses. This requires basic skills in critiquing research reports, analysing and interpreting of the report's results. Albeit, the study sample has a high number of respondents having had research education and/or having attended further professional education, items such as 'not feeling capable of evaluating the quality of research', 'statistical analysis are not understandable' and 'research is not

reported clearly and readably' were still perceived as a moderate to great barrier by 40 - 54.7% of respondents. This finding suggests some shortcomings in the content of the educational curricula, and it seems imperative to address the educational needs of the individuals attending further education. These shortcomings have also been reported by Barriball et al. (1992).

Walker (1998) found that degree graduates (who it was hoped would have an understanding of research) thought their research knowledge was linked to further study. Many of this study's sample had pursued considerable further education. However, when Walker's (1998) finding is related, it becomes questionable whether it is only the amount of education that has to be extended. Instead, the content of educational preparation and research practice, at basic and continuing level, perhaps should be reviewed as to its capability to achieve the desired goal of increased research utilisation.

Further factors at the individual level that can be a hindering or a facilitating force for nurses to use research in their clinical practice were found within the attitudinal sphere. Negative attitudes held by nurses toward professional development and a general feeling of apathy and dissatisfaction was felt to be a barrier to research use. Whereas motivated colleagues that show enthusiasm and working with like minded people is seen to facilitate the use of research in clinical practice. Bostrom et al. (1989) and Champion and Leach (1989) demonstrated in their studies that positive attitudes toward research correlated with increased research utilisation in practice. Furthermore, Bostrom et al. (1989) found a positive correlation between attitudes toward research or research utilisation capability, and the educational background of nurses. This later view supports the previously discussed suggestion on the positive attitudes of this study's sample, with a high rate of bachelor degree graduates.

The development of a work place culture that encourages research inquiry, as one participant suggested, is a step to foster positive attitudes toward research use, and each individual nurse can take up some of the

responsibility for its achievement. Although, there is still an apparent need for wider organisational support, which will be discussed in the following section.

### **5. 1. 2. Organisational Barriers and Facilitators**

The biggest three barriers, all items from the organisational sub scale, i.e. 'insufficient time on the job to implement new ideas', 'insufficient time to read' and 'physicians not co-operating with new implementation', indicate a need for development within the management/administrative domain at the organisational level. As has been promulgated within the theoretical framework, the implementation of innovations within an organisation requires regular modification, or reinvention, and has to be made clear to all members of the system (Zaltman et al., 1973). This process requires time resources and supportive managers.

Without any doubt, 'time' is a necessary resource for individual nurses. They need time to get acquainted with, and reflect on an innovation before implementation can take place (Bostrom et al., 1989). An organisation that supports the use of research findings to improve clinical practice should take account of this. The tenets of the underlying theoretical framework used in this thesis, define the importance of a social systems' norms in terms of their influence on adopters and the rate of adoption of innovation (Rogers, 1995). Clearly, defined time allowances for staff to engage in activities that underlay the capability of research utilisation, such as reading, or trial and evaluation of innovation are needed. Lack of time to visit the library, discuss research with colleagues etc. during work hours is a major barrier for this study's sample. Designated time allocation, therefore, is seen as a facilitating factor for their use of research in clinical practice. As an organisational norm these allowances could be institutionalised within position descriptions and/or strategic goal plans for individual work areas.

It is suggested that the fostering of interdisciplinary teamwork is a task that has to be initiated and structured also at the managerial level and

it cannot be left to the sole responsibility of the individual nurse. Although each professional has a responsibility to develop conducive working relationships within a multidisciplinary team, the power distribution arising from the operational structure of an organisation must be acknowledged. The fact that 'physicians not co-operating with new implementation' is a big barrier to nurses' use of research in clinical practice, demonstrates an imbalance in terms of essential professional authority for nurses in their own regard.

Examples abound in the literature for suggestions regarding required organisational support for nurses in clinical practice (Horsley et al., 1978; Hefferin et al., 1982; Rutledge & Donaldson, 1995; Stetler et al., 1998; Van Mullen et al., 1999). Strategic support and guidance from senior staff, management and nurse educators/clinical nurse specialists that help to understand and use appropriate research results seems crucial. In fact, dedicated research nurses in the work areas or nursing research departments within the institutions, that lead the utilisation process, are described as beneficial.

Another aspect of organisational support to diminish perceived barriers is demonstrated around access and availability of research results. For this sample, access and availability of research reports were of concern. The items 'research reports are not readily available' and 'the relevant literature is not compiled in one place' ranked 4th and 7th, with 55.6% and 54.4% of the sample respectively finding it a moderate or great barrier to their use of research in clinical practice. In the three factor solution presented earlier, these two above items also loaded on the third factor containing the organisational barriers. This finding was further strengthened with the statements made in the open ended questions. That is, improved access of library services and availability of research reports were mentioned as facilitators of research utilisation by several respondents.

The study setting has a nursing library open to its staff during conventional office hours, i.e. 09.00 am - 05.00 pm from Monday to Friday.



This facility currently subscribes to over sixty nursing journals. The library of the medical school, in an adjoining building, has more extended access, including weekends, and its services are accessible by hospital staff, including free loan of books and inter loan support. In this library, specific nursing publications are, however, very limited.

Accessibility of relevant literature and research reports has been recognised as impacting considerably on research dissemination and utilisation in nursing (Champion & Leach, 1989; Lacey, 1994). Strategies to disseminate research findings and ensure availability of reports have to be paid some attention. It has to be taken into account that most nursing and midwifery staff work on rostered and rotating 24 hour shifts, which limits the opportunity to access the library. Anecdotal evidence from the study setting also suggests that the accessibility of the medical library is only poorly known amongst some of the nursing staff in the wards. Several statements from the sample indicated it would be of benefit for their use of research if specific journals were held in the ward, or, if they could order article copies from the library and/or have after-hours access. Additionally, Internet facilities available to them could support research utilisation.

The vast and growing availability of computer based resources through information on the Internet is a fact that has to be included in the discussion on research utilisation in today's time and age. Although easy computer access is generally available to all staff in all ward areas of the study site, the availability of over 200 professional on line journals, amongst them 'Nursing Research' and 'Research in Nursing & Health', provided by the medical school library, are only accessible for employees with an Internet user permit. A restriction which excludes almost all staff nurses and midwives. The characteristics of various communication channels and their relation to innovation diffusion described in the theoretical framework has to be seen in the light of the profound recent changes in communication technology. Holloway (2001) argues for the need for nurses to access this information as the Internet provides not only 'more rapid access to up-to-date evidence to support care' (p. 6), but also reduces the delay between the research and its utilisation. Providing the

organisational infrastructure for nurses to do so should be a goal of every health care agency.

### **5. 1. 3. Research Barriers and Facilitators**

Some characteristics of the research, including the way it is reported, pose barriers to the utilisation of research findings themselves (Funk et al., 1989a, 1989b). Five items that loaded on the research characteristics factor in the three factor analysis solution were perceived as a moderate to great barrier by over 40% of this study's sample. These items included the readability of reports, the level of understanding of statistical analyses, unclear implications for practice, the lack of replication and conflicting reports of results.

The key characteristics of the innovation (research result), i.e. the relative advantage, compatibility, complexity, trialability and observability, have been explored in the theoretical framework section as to their importance to the utilisation process. The item ranking results of this sample support the thorough consideration of these characteristics. King et al. (1981) see a major responsibility to influence the characteristics of the research results positively on the side of the researcher. They advocate that researchers plan systematically from the beginning of their project for dissemination that includes consideration of these possible barriers. Funk et al. (1989b) urged researchers to not give in to the professional tension of displaying foremost the scientific merit of their work to other researchers. This should not be done to the detriment of using 'straightforward plain English' (p. 491) that can be understood by clinicians in the dissemination phase of a research project.

There are other measures to decrease the barriers stemming out of the characteristics of the research. Specific dissemination models, strategic frameworks and research discussion groups are all examples of various approaches to overcome barriers arising from the structure and reporting of research (Funk et al., 1989a, 1989b; Brooten et al., 1999; Chua Patel et al., 2001). From statements in the open ended question about facilitators to

their use of research in clinical practice it is clear that some nurses would like to have more support from work colleagues in advanced positions, i.e. nurse educators and clinical nurse specialists. Although not generally specified by this sample, it is argued that this support is especially needed within the area of understanding and analysing research reports, as to their suitability for implementation, and translation into individual work areas respectively (Thompson et al., 2001a, 2001b). Nurse educators and clinical nurse specialists have through their place in the organisational system a crucial role to play in the facilitation of research use in clinical practice. According to the underlying theoretical framework they combine the personal characteristics of early adopters, including a wide exposure to various communication channels, and have also a strongly degree of homophily with the staff nurses that facilitates diffusion of innovations (Rogers, 1995).

## **5. 2. Differences between Sub Samples**

Inferential statistical tests did not reveal many differences in this sample. However, there were some differences in the scoring of items and sub scales between distinct sub groups of the sample.

Firstly, it is of note that the group of charge nurses/team leaders and clinical nurse specialists/nurse educators perceived the characteristics of the organisation sub scale items much less of a barrier overall than did the group of staff nurses and midwives. The item from this sub scale that had a statistically significant difference ( $p < 0.05$ ) is 'insufficient authority to change patient care procedures'.

Within a practice setting, it seems to be understandable that staff in a position with intrinsically more authority for direct decision making, such as at charge nurse level, also perceive to have sufficient authority to initiate change based on research findings if needed. However, this does preclude that nurses in these authority positions have the necessary understanding of research theory and the current literature in their area to implement it in clinical practice. Hefferin et al. (1982) found that the

majority of their nurse administrator sample believed permission to implement innovation was within their responsibilities. The charge nurses/team leaders in this sample perceived the item 'insufficient authority to change patient care procedures' as a lesser barrier than the staff nurses. Assuming that the charge nurses/team leaders of this sample believe, too, that the implementation of innovation is within their responsibilities, their leadership approach might be an influential key factor in regards to the staff nurses' perception of that barrier. Transcending of authority to the staff nurses and appropriate sharing of the responsibilities in the research utilisation process in the clinical area could decrease that organisational barrier for the staff nurses.

Secondly, clinical nurse specialists/nurse educators perceived the item 'methodological inadequacies of the research' much more of a barrier than did staff nurses/midwives (Table 16.). This finding could pose a problem in relation to the previous mentioned need for support from nurse educators and clinical nurse specialists expressed by staff nurses. However, this finding could also be caused by the more extended research knowledge that is an expectation of clinical nurse specialists/nurse educators. They should be more aware of methodological issues in research and therefore identify methodological inadequacies more readily. Similar, participants who had a research module in their basic education perceived the items in the 'characteristics of the individual' sub scale much more of a barrier than did those without a research module. The present study did not assess the actual use of research in clinical practice of participants. Although nurses with an expected knowledge of research and/or exposure to research education perceive the mentioned barrier as a stronger hindrance to their use of research, it cannot be concluded that this has an effect on their actual amount of applying research findings in clinical practice.

A third area in which some differences were demonstrated is between the female and male respondents of this sample (Table 15.). The three items that pose a greater barrier to the male registered nurses are each from a different sub scale, i.e. 'characteristics of the individual',

'characteristics of the organisation' and 'characteristic of the research'. Given the constraints of the sample size and sampling technique, conclusions based on these results would be considered tentative. However, the indication that there are differences between female and male nurses in regards to research utilisation is worthy of note and could provide data for further investigation. Based on the knowledge about individual's characteristics in the diffusion of innovation process, outlined in the theoretical framework, male nurses have the potential to face specific challenges due to their minority place within the profession. This marginalisation could impact on their perception of needed change, or benefits thereof. Furthermore, the lack of support from colleagues felt, could also be a reflection of this minority stand.

Lastly, the difference in the return rate of questionnaires from the various clinical areas also leads to some questions for which suitable explanations could prove valuable in the discussion on research utilisation in practice in clinical nursing practice. Four out of nine clinical areas had a response rate of > 50%. High response rates reflect support of research activities by others (Stetler, 1984). The question can be posed, are these areas with larger support any different from the other areas with regards to their general fostering or support of research utilisation? And if so, what specific individual, environmental and/or leadership factors are influential and required to further build and nurture such support? These questions cannot be answered by the data collected in this study, but are worthy some further research. For instance, further inquiry into this phenomena could enlighten the debate on facilitating factors for research utilisation that may be embedded in the environmental make up of specific work areas.

In summary, the results from the comparison of distinct sub groups of the sample regarding their barriers to research utilisation in clinical practice alert to areas where further investigations into nursing research utilisation would be worth pursuing.

### 5. 3. Comparison with International Studies

As stated previously, the questionnaire used in this replication study has been used in several international settings with differing groups of health professionals, i.e. in the United States with staff nurses and nurse administrators (Funk et al. 1991b, 1995), in the UK with staff nurses (Dunn et al., 1997), in Sweden with staff nurses, nursing students, doctors and nurse educators (Nilsson Kajermo et al., 1998, 2000) and in Australia (Retsas & Nolan, 1999; Retsas, 2000). Demographic characteristics from overseas studies using the BARRIER's scale were similar to the overall New Zealand statistics in terms of gender and age (Funk et al., 1991a; Dunn et al., 1997; Nilsson Kajermo et al., 1998). The Australian sample in Retsas (2000) study was similar to this New Zealand sample distribution which showed a younger mean age compared to the New Zealand national statistics (Nursing Council, 2000b) and the other overseas sample.

There are several similarities and differences comparing some of the results from previous studies. However, one has to bear in mind the limitation of such a comparison in terms of the differences in sampling strategies used and sample sizes achieved in them. Firstly, the ranking of items according to the number of respondents perceiving them as a moderate to great barrier to their use of research in clinical practice is of interest. In all the above mentioned studies it is the items from the organisational sub scale that make up the strongest barriers. Furthermore, 'insufficient time on the job to implement new ideas' ranked within the first five major barriers across previous studies (Funk et al., 1991a; Dunn et al., 1997; Nilsson Kajermo, 1998). It seems that the expectation of nurses to use research in practice is not as yet supported within daily practice. This support should be made visible through adaptations within the daily work load that integrates essential time requirements for research utilisation activities across the international scene.

Secondly, a difference could be found comparing the numbers of items that are perceived as great or moderate barriers by more than 50% of the individual studies' samples. Only nine items each in this study and in

Nilsson Kajermo's et al. (1998) sample scored such a high percentage. Whereas, Funk's et al. (1991a) and Dunn's et al. (1997) samples had 18 and 19 items respectively which were over the 50% mark. Apart from the cultural differences in the settings and in the educational preparation of the four samples, it could be suggested that the time that has elapsed between these assessments reflects an improvement regarding research utilisation in clinical practice. For example, a decrease in barriers for individual nurses to use research in clinical practice supports the trend of general development of the nursing profession that takes place internationally.

No effort has been made in this study to ascertain that the publications read contained research reports, as did for example Retsas (2000), when he inquired about specific journal titles. Retsas commented that his subjects frequently read several journals that contained none or few research publications, a finding that is supported by Eastabrook (1998). Knowledge of current research findings is a pre requisite for the implementation of innovations. According to the tenets of the theoretical framework, individuals with a wide exposure to various communication channels have a higher adoption rate (Rogers, 1995). The implications of this in the study's context are important to consider. If the reading habits of nurses are narrow, including mainly journals with a minor research report content, the process of innovation diffusion and research utilisation is fraught.

#### **5. 4. The Research Instrument**

The results from this study's psychometric evaluation demonstrate that the BARRIER scale is a reliable tool to assess barriers to and facilitators of research use in clinical practice, in a sample of New Zealand nurses and midwives.

The four factor solution presented by Funk et al. (1991a) matched with the underlying theoretical framework based on Rogers' (1995) diffusion of innovation model, representing the influence of the four key concepts, i.e. characteristics pertinent to the individual, the organisation,

the research itself and the characteristics within the communication process. Dunn et al. (1997) in their replication of Funk et al.'s (1991a) work documented some incongruent findings. Retsas & Nolan (1999) and Retsas (2000) performed individual factor analyses with the data of their respective sample. They reported best fit of their data sets in a four, respectively three factors solution, which they labeled according to pivotal item content.

A concurring finding in this study has been that a four, or three factor solution can be supported. Variance in assigning of items to factor scales being likely produced by sample size, socio cultural issues and levels of qualification of the sample. Whilst a three factor solution has the simplest 'best fit' in this sample, the four factor solution still accounts for a greater level of variance at 52%. The initial Cronbach Alpha for the scale and sub scales in this study were satisfactory and overall somewhat higher than in previous studies.

As Dunn et al. (1997) noted, the lack of fit of Funk's et al. (1991a) factor analysis to their own sample represents only the lack of international robustness for the factor solution. The differences would appear to evolve from cultural differences that are based on historical, educational or organisational factors pertinent in the various research settings. In fact, the Retsas and Nolan (1999) and Retsas (2000) Australian studies reported within a short time frame two factor solutions. The individual setting's culture is arguably an influence regarding the sub scale formation without compromising the validity of individual items. Considering the discussion on decision making within factor analytical procedures, the three factor solution presented earlier is the simplest fitting solution for the data from this study.

However, consideration of cultural issues and their influence on research utilisation in clinical practice are worthy of note. Qualitative investigations could open up this area for development of a cultural factor within the research instrument. This could assess the specific barriers that arise from any cultural issues.



## 5. 5. Limitations of the Study

This replication study has a number of limitations that have to be acknowledged for an appropriate evaluation of the results to be made. Firstly, the nature of the sampling technique employed and the response rate achieved have perhaps weakened the generalisability of the findings. Employing a non probability sample strategy effectively limits the representativeness of a study's results (Polit, 1997). A randomised sampling strategy would have had eliminated the bias that was encountered by relying on the equal and comprehensive distribution of questionnaires by the charge nurses to all staff targeted. Therefore, findings from this study cannot be generalised to the whole of the New Zealand nursing and midwifery population, and suggestions on the meanings of the results have to be cautiously reviewed for different settings. However, tentative conclusions are possible if taken with some circumspection.

The demographic characteristics of the sample (n=164) demonstrate several differences compared with the national workforce statistics for nurses and midwives (Nursing Council, 2000b). This study's sample mean age was 34 years, considerably younger than the national average which is 42.6 years. An issue that was raised by the New Zealand Nursing Council was that the decline of nurses younger than 34 years of age nationally might reflect the loss of new graduates, and a reduced supply from training programs, combined with an increase in more mature nursing students. The study setting had a well established new graduate program that might facilitate recruitment. One can argue that this increased recruitment of new graduates has a bearing on research utilisation as well.

Furthermore, to the difference in age, there was a variation in contractual work time between this sample and the New Zealand statistics (Nursing Council, 2000b). Whereas 46% of the active nurses in New Zealand work full time, with a further 12% working 0.8FTE, this study sample had 75.7% working 0.8FTE and above. This might be a reflection of the generally younger age of the sample, with possible implication in

regards to their family commitments allowing for an increased occurrence of full time work. It could also be that the comparably higher living costs in the metropolitan area of the study site have an impact on the need for higher FTE compared to the national average. However, these factors are not evidential.

Given the fact that the sample has been restricted to registered nurses and midwives working in the acute general inpatient settings, the results can not be transferred easily to other settings such as the community or mental health nursing. Further research around the barriers to research utilisation in clinical practice for these groups of nurses is warranted in order to establish differences and similarities to this study's sample, and to further develop the scope of understanding of research utilisation in nursing generally.

Some of the limitations arise from the content of the research tool itself. The three international studies used here for comparison had all included the answer option of 'no opinion' in addition to the four point Likert scale ranging from 'not at all' to 'great'. Although Dunn et al. (1997) and Nilsson Kajermo et al. (1998) excluded the 'no opinion' responses in their statistical calculations, they reported on the numbers of respondent choosing this response on the individual items. Funk et al. (1991a) does not explicitly indicate how the 'no opinion' responses have been dealt with in their study. The present study did not include the option for 'no opinion' on the individual items. Therefore, a direct statistical comparison across the studies that used the BARRIER's scale is not justified.

A further limitation of this study is that the reading frequency of research articles cannot be supported by data that would have been elicited through questions regarding the type of publication read preferably or most often. Specific identification of the publications that are actually read, and the amount of research reported in these journals, could be more indicative of the amount of diffusion of research results. As several studies have shown, not all journals read frequently by a nurses do publish research reports as their main content (Estabrooks, 1998; Retsas, 2000).

Lastly, it should be mentioned that the investigator of this study worked part time as a staff nurse in one of the clinical areas with a high response rate. This area was one of four out of nine with a response rate of 50% or above, suggesting that the investigators work commitments were only a remote reason to any response bias.

## **5. 6. Future Direction: Recommendation for Practice**

The results from this study indicate several areas where specific recommendations for the study setting are worth considering. These considerations could facilitate and improve research utilisation amongst nursing staff in the organisation. Individual barriers played only a minor role in this sample. Support within the organisational structure, including necessary educational developments are the main focus for change to improve research utilisation capacity.

Nurses expressed their need for organisational support to facilitate their use of research in clinical practice in various ways. Dedicated time allowance that is formally acknowledged within job descriptions and institutional policies should be made available. Clear strategic planning of research utilisation projects within specific areas could guide the allocation of responsibilities, and the necessary time to pursue the tasks required within project, to individual nurses as part of their work assignments. Specific key positions, i.e. charge nurses/team leaders and nurse educators/clinical nurse specialists are accountable through their leadership function for the support of nursing staff. This support could include the further appropriate delegation of responsibilities, and achievement of this role function could be assessed within performance appraisals for these key positions.

There is a need for specific organisational resourcing of nursing research and research utilisation that could support the establishment of a dedicated nursing research department, or nurse researcher positions within the institution. Inclusion of financial resourcing for research within the annual nursing service budget, being declined in recent years, should

be strongly pursued with insistence. The establishment of a Centre for Midwifery & Nursing Education, Practice and Research (CMNEPR) earlier this year is a promising collaborative initiative between the DHB of the study setting and the Graduate School of Nursing & Midwifery of a local university. One of CMNEPR's (n. d.) terms of reference is 'to provide a forum for midwives and nurses for dissemination of research findings'. Furthermore, one of the objectives of the Centre is to 'guide, mentor and train midwives and nurses, incorporating research and scholarship into clinical practice'. The monitoring of the achievement of these objectives in the future can provide valuable indicators of the status quo of research utilisation in the study setting.

The availability of other resources, e.g. library service and computer access should also be reviewed and adequately extended. After hours access, on line facilities and specific journal titles held in speciality areas are but a few extra options to possibly expand and explore.

In summary, the following main recommendations for practice are made:

- Establishment of well defined time allowances for each staff in clinical practice to pursue research utilisation specific tasks. This time allowance should be incorporated into contract and position descriptions, and be considered in staffing calculations.
- Provision of dedicated funding for nursing research and research utilisation projects, and necessary material resources.
- Development of a strategic plan on research implementation for the organisation. This could be co-ordinated by the CMNEPR and include designated research nurse positions from the DHB.
- Refinement of the current accessibility and availability of relevant nursing research literature, including the extension of Internet access for clinical staff.
- Review and development of all the educational programs that are delivered within the organisation and in partnership with other tertiary

institutions. The focus of this review should be the integration of appropriate knowledge and skills necessary in the research utilisation process in clinical practice.

In the course of this research project some initiatives regarding research endeavours within the study setting have emerged. In personal communication between the researcher and individuals in the organisation it evolved that some of the issues covered in these recommendations are already addressed. Bearing in mind the study's limitations as has been stated before, the results of this sample cannot be generalised to all nursing settings in New Zealand. However, with appropriate caution the recommendations made here could be valuable to other settings. Furthermore, there are areas in which further research would be valuable to advance knowledge about factors influencing research utilisation in general.

## **5. 7. Further Research**

The results from this initial assessment of barriers to and facilitators of research use in clinical practice in a sample of New Zealand nurses highlighted areas where further research would be of benefit. Such further investigations should aim at the advancement of the knowledge about factors important to the process of research utilisation.

Firstly, as has been discussed in the methodology chapter, the sample was restricted to nurses and midwives in acute ward settings. It would be advisable if barriers and facilitators could be assessed in different settings, e.g. mental and community health. Given the complexity of research utilisation and its multifactorial influences, it can be argued that nurses working for example in mental health or community nursing areas are challenged by their own set of major barriers in their working environment. Furthermore, the multiple statements that were gained in the open ended question on additional barriers, that were related to the 'culture' perceived to govern specific work areas, point also in the direction

that there are important influences to research use in differing health care settings.

The results from the open ended questions regarding additional barriers and facilitators (Table 14. & 16.) give some more valuable indications for further research. Time has been mentioned from various view points. Although specifically covered in two items within the research tool, it appears that there are other dimensions to the time factor as an enhancing or hindering factor to research utilisation. Work load evaluations and auditing of the availability of the time required to engage in research implementation activities could provide a basis for necessary adjustments.

Secondly, further research into educational needs and outcome measurements of nursing education related to research utilisation knowledge and skills is needed. Such investigation could provide clarity for further development of established research modules and continuing education courses. Moreover, the effectiveness of these programs has to be monitored. They must meet their objectives of enabling participants to use research in their clinical practice for the benefit of patient care. Although not the main barriers for this sample, items indicating a lack of educational preparation were perceived by a considerable number of participants as a moderate to great barrier. In light of the fact that a third of the sample had pursued further post registration in nursing, the opportunity to foster the appreciation and an understanding of research use within such courses should be further explored and evaluated.

Lastly, after the basic barriers to and facilitators of research use in clinical practice has been thoroughly assessed, action research projects that focus on specific care issues in nursing could be developed. Such projects could be tailored to the specific needs of each individual area and include addressing the educational needs of the staff involved. Such an approach would not only put research utilisation into action but enhance the future capability and knowledge of nurses and midwives to engage in the research utilisation process.

## 5. 8. Conclusion

This study set out to assess the barriers to and facilitators of research use in clinical practice in a New Zealand health care setting. This aim has been met and the results have been discussed in previous sections. It is hoped that the results' presentation and discussion enable further planning to enhance research utilisation in the particular setting, but as well, add knowledge to the state of research use in clinical practice within New Zealand.

The international literature is a useful starting point to inquire into factors influencing this research use in clinical nursing practice and strategies to enhance and implement the research utilisation process. However, each socio-cultural environment is faced with its unique challenges and even particular settings might differ considerably in their needs. This has been demonstrated in the pursuit of the second aim of the study, comparing the results of this sample with international studies. Replication studies, such as the present one, can fill the gap in knowledge arising from the environmental differences, taking advantage of knowledge already developed in a field like nursing research utilisation.

Addressing the third aim of the study, it was valuable to assess the research tool, through a replication study, for its validity and for further development. One of the developments to perhaps further consider is the inclusion of a sub scale concerned with cultural issues that pose barriers to research utilisation. This is particularly important in countries that have a high proportion of indigenous people in nursing practice. Especially the fact that Western research styles do not always meet with indigenous research beliefs is of note.

In the quest to deliver high quality 'evidence based' nursing practice within today's tight health budget the call for economical application of the results of research is justified and critical to nursing research development. This study was born out of my concerns about the level of research application I observed in the clinical practice settings I have worked in as a

nurse. The study has demonstrated that there are considerable barriers for nurses to be able to use research findings in their daily practice.

The major barriers to research utilisation in clinical practice for this sample clustered around two main issues:

- Insufficient time at work, and
- Lack of organisational support.

It is hoped that revealing these barriers through a survey tool like the BARRIER scale will be useful to consider appropriate changes to organisational structures and educational facilities that can be approached now. It is hoped that research utilisation practice will ultimately benefit from these changes and be able to make a positive difference in the nursing care that is delivered.



## References\*

- Akinsanya, J. (1994). Making research useful for practising nurses. Journal of Advanced Nursing, 19(1), 174 - 179.
- Babbie, E. (1992). The practice of social research. Belmont, California: Wadsworth Publishing Co.
- Barnsteiner, J., Ford, N., & Howe, C. (1995). Research utilisation in a metropolitan children's hospital. Nursing Clinics of North America, 30(3), 447 - 455.
- Barriball, K., While, A., & Norman, I. (1992). Continuing education for qualified nurses: A review of the literature. Journal of Advanced Nursing, 17, 1129 - 1140.
- Bennett, M. (2001). The LANSS pain scale, the Leeds assessment of neuropathic symptoms and signs. Pain, 92, 147 - 157.
- Bond, S., & Bond, J. (1982). A Delphi survey of clinical nursing research priorities. Journal of Advanced Nursing, 7, 565 - 575.
- Bonell, C. (1999). Evidence-based nursing, A stereotyped view of quantitative and experimental research could work against professional autonomy and authority. Journal of Advanced Nursing, 30(1), 18 - 23.
- Bostrom, A., Malnight, M., MacDougall, J., & Hargis, D. (1989). Staff nurses' attitudes toward nursing research: A descriptive survey. Journal of Advanced Nursing, 14(11), 915 - 922.
- Brooten, D., Youngblut, J., Roberts, B., Montgomery, K., Standing, T., Hemstrom, M., Suresky, J., & Polis, N. (1999). Disseminating our breakthroughs, Enacting a strategic framework. Nursing Outlook, 47(3), 133 - 137.
- Carper, B. (1978). Fundamental patterns of knowing. Advances in Nursing Sciences, 1(1), 13 - 23.
- Carpenter, H. (1971). An improved system of nursing education for New Zealand. Wellington, The Department of Health.

Centre for Midwifery and Nursing Education, Practice and Research.  
No date. [Brochure] Wellington: Author.

Champagne, M., Tornquist, E., & Funk, S. (1997). Achieving research-based practice. American Journal of Nursing, 97(5), 16 AAA - DDD.

Champion, L., & Leach, L. (1989). Variables related to research utilisation in nursing: An empirical investigation. Journal of Advanced Nursing, 14(9), 705 - 710.

Chick, N. (1987). Nursing research in New Zealand. Western Journal of Nursing Research, 9(3), 317 - 334.

Child, D. (1990). The essentials of factor analysis (2nd ed.). London: Cassell Education Ltd.

Chua Patel, C., Diemert Moch, S., Cordes, M., Brueggen, C., Dose, A., Kinsey, G., & Schroeder, B. (2001). Research discussion groups: Guidelines for action. MEDSURG Nursing, 10(1), 31 - 35.

Clarke, H. (1999). Moving research utilisation into the millennium. Canadian Journal of Nursing Research, 31(1), 5 - 7.

Closs, S., & Cheater, F. (1994). Utilisation of nursing research: Culture, interest and support. Journal of Advanced Nursing, 19(4), 762 - 773.

Closs, S., & Cheater, F. (1999). Evidence for nursing practice: A clarification of the issue. Journal of Advanced Nursing, 30(1), 10 - 17.

Cooney, C., Stabbings, S., Roxburgh, M., Mayo, J., Keen, N., Evans, E., & Meehan, T. (1995). Integrating nursing research and practice: Part II - A Delphi study of nursing practice priorities for research based solution. Nursing Praxis in New Zealand, 10(1), 22 - 27.

Corner, J. (1991). In search of more complete answers to research questions. Quantitative versus qualitative research methods: Is there a way forward? Journal Of Advanced Nursing, 16, 718 - 727.

Crane, J. (1985). Using research in practice. Research utilization: Theoretical perspectives. Western Journal of Nursing Research, 7(2), 261 - 268.

Crane, J. (1995). The future of research utilization. Nursing Clinics of North America, 30(3), 565 - 577.

Cronenwett, L. (1995). Effective methods to disseminating research findings to nurses in practice. Nursing Clinics of North America, 30(3), 429 - 438.

Czurylo, K., Gattuso, M., Epsom, R., Ryan, C., & Stark, B. (1999). Continuing education outcomes related to pain management practice. The Journal of Continuing Education in Nursing, 30(2), 84 - 87.

Daly, J., Chang, E., & Bell, P. (1996). Clinical nursing priorities in Australian critical care: A pilot study. Journal of Advanced Nursing, 23, 145 - 151.

Dooks, P. (2001). Diffusion of pain management research into nursing practice. Cancer Nursing, 24(2), 99 - 103.

Downs, F. (1996). On clinical interpretations of research findings. Nursing Research, 45, 195.

Duffy, M. (1985). Designing nursing research: the qualitative-quantitative debate. Journal of Advanced Nursing, 10, 225 - 232.

Dunn, V., Crichton, N., Roe, B., Seers, K., & Williams, K. (1997). Using research for practice: A UK experience of the BARRIERS scale. Journal of Advanced Nursing, 26(6), 1203 - 1210.

Duvault, M., & 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.

Elcock, K. (1996). Consultant nurse: an appropriate title for the advanced nurse practitioner. British Journal of Nursing, 5(22), 1376 - 1381.

Estabrooks, C. (1998). Will evidence-based practice make practice perfect?. Canadian Journal of Nursing Research, 33(1), 15 - 36.

Estabrooks, C. (1999). The conceptual structure of research utilization. Research in Nursing & Health, 22, 203 - 216.

Evans, D. (1980). Everynurse as researcher: An argumentative critique of Principles and Practice of Nursing. Nursing Forum, 19(4), 335 - 349.

Fawcett, J. (1980). A declaration of nursing independence: The relation of theory and research to nursing practice. The Journal of Nursing Administration, 6, 36 - 39.

Ford-Gilboe, M., Campell, J., & Berman, H. (1995). Stories and numbers: Coexistence without compromise. Advances in Nursing Science, 18(1), 14 - 26.

Francis, G. (1999). Introduction to SPSS for Windows, version 7.5, 8.0. (2nd ed.) Australia: Prentice Hall.

Funk, S., Tornquist, E., & Champagne, M. (1989a). A model for improving the dissemination of nursing research. Western Journal of Nursing Research, 11(3), 361 - 367.

Funk, S., Tornquist, E., & Champagne, E. (1989b). Application and evaluation of the dissemination model. Western Journal of Nursing Research, 11(4), 486 - 491.

Funk, S., Champagne, E., Wiese, R., & Tornquist, E. (1991a). BARRIERS: The barriers to research utilization scale. Applied Nursing Research, 4(1), 39 - 45.

Funk, S., Champagne, E., Wiese, R., & Tornquist, E. (1991b). Barriers to using research findings in practice: The clinician's perspective. Applied Nursing Research, 4(2), 90 - 95.

Funk, S., Champagne, M., Tornquist, E., & Wiese, R. (1995). Administrators' views on barriers to research utilization. Applied Nursing research, 8(1), 44 - 49.

Funk, S., Tornquist, E., & Champagne, M. (1995). Barriers and facilitators of research utilisation. Nursing Clinics of North America, 30(3), 395 - 407.

Gibson, J., & Kenrick, M. (1998). Pain and powerlessness: the experience of living with peripheral vascular disease. Journal of Advanced Nursing, 27, 737- 745.

Greenwood, J. (1984). Nursing research: A position paper. Journal of Advanced Nursing, 9: 77 - 82.

Harrison, L., Lowery, B., & Bailey, P. (1991). Changes in nursing students' knowledge about and attitudes toward research following an undergraduate research course. Journal of Advanced Nursing, 16, 807 - 812.

Hart, E. (1996). Action research as a professionalizing strategy: issues and dilemmas. Journal of Advanced Nursing, 23, 454 - 461.

Hefferin, E., Horsley, J., & Ventura, M. (1982). Promoting research-based nursing: The nurse administrator's role. The Journal of Nursing Administration, 5, 34 - 41.

Hicks, C. (1996). A study of nurse's attitudes toward research: a factor analytical approach. Journal of Advanced Nursing, 23, 373 - 379.

Hicks, C., & Hennessy, D. (1997). Mixed message in nursing research: Their contribution to the persisting hiatus between evidence and practice. Journal of Advanced Nursing, 25(3), 595 - 601.

Holloway, K. (2001). WebScope. New Zealand Nursing Review, 2(5), 6.

Holter, I., & Schwartz-Barcott, D. (1993). Action research: What is it? How has it been used and how can it be used in nursing? Journal of Advanced Nursing, 18, 298 - 304.

Horsburgh, M. (1989). Graduate nurses' adjustment to initial employment: natural field work. Journal of Advanced Nursing, 14, 610 - 617.

Horsley, J., Crane, J, & Bingle, J. (1978). Research utilization as an organisational process. Journal of Nursing Administration, 4 -6.

Hunt, M. (1987). The process of translating research findings into nursing practice. Journal of Advanced Nursing, 12, 101 - 110.

Joanna Briggs Institute for Evidence Based Nursing and Midwifery. (2001). Best Practice, 5(2), 1 - 6.

Jones, J. (2000). Performance improvement through clinical research utilization: The linkage model. Journal of Nursing Care Quality, 15(1), 49 - 54.

Kearney, M. (2001). Levels and applications of qualitative research evidence. Research in Nursing & Health, 24, 145 - 153.

Ketefian, S. (1975). Application of selected nursing research findings into practice: A pilot study. Nursing Research, 24(2), 89 - 92.

Kim, J. & Mueller, C. (1978a). Introduction to factor analysis: What is it and how to do it. Beverly Hills, California: Sage Publications Ltd.

Kim, J. & Mueller, C. (1978b). Factor analysis: Statistical Methods and practical issues. Beverly Hills, California: Sage Publications Ltd.

King, D., Barnard, K., & Hoehn, R. (1981). Disseminating the results of nursing research. Nursing Outlook, 29, 164 - 169.

Kitson, A. (1999). Research utilisation: Current issues, questions, and debates. Canadian Journal of Nursing Research, 31(1), 13 - 22.

Kline, P. (1994). An easy guide to factor analysis. London & New York: Routledge.

Lacey, E. (1994). Research utilisation in nursing practice - a pilot study. Journal of Advanced Nursing, 19(5), 987 - 995.

Leino-Kilpi, H., Solante, S., & Katajisto, J. (2001). Problems in the outcomes of nursing education create challenges for continuing education. The Journal of Continuing Education in Nursing, 32(4), 183 - 189.

Lewandowski, L., & Kositsky, A. (1983). Research priorities for critical care nurses: A study by the AACCN. Heart & Lung, 12(1), 35 - 44.

Long, J. (1983). Confirmatory factor analysis. Beverly Hills, California: Sage Publications Ltd.

Mackintosh, C., & Bowles, S. (1997). Evaluation of a nurse-led acute pain service. Can clinical nurse specialists make a difference? Journal of Advanced Nursing, 25, 30 - 37.

Madjar, I. (1981). The experience of pain in surgical patients: A cross-cultural study. Unpublished master's thesis, Massey University, Palmerston North, New Zealand.

Madjar, I. (1991). Pain as embodied experience: A phenomenological study on clinically inflicted pain. Unpublished doctoral dissertation, Massey University, Palmerston North, New Zealand.

Michel, Y., & Sneed, N. (1995). Dissemination and use of research findings in nursing practice. Journal of Advanced Nursing, 11(5), 306 - 311.

Miller, P. (1996). Dissemination and utilisation of research: Outcome behaviours at the baccalaureate level. Journal of Nursing Education, 35(4), 175 - 178.

Mulhall, A. (1995). Nursing research: What difference does it make? Journal of Advanced Nursing, 21, 576 - 583.

Nilsson Kajermo, K., Nordstrom, G., Krusenbrant, A., & Bjorvell, H. (1998). Barriers to and facilitators of research utilisation, as perceived by a group of registered nurses in Sweden. Journal of Advanced Nursing, 27(4), 798 - 807.

Nilsson Kajermo, K., Nordstrom, G., Krusenbrant, A., & Bjorvell, H. (2000). Perception of research utilization: comparison between health care professionals, nursing students and a reference group of nursing clinicians. Journal of Advanced Nursing, 31(1), 99 - 109.

Nolan, M., & Grant, G. (1993). Action research and quality of care: a mechanism for agreeing basic values as a precursor to change. Journal of Advanced Nursing, 18, 305 - 311.

Nursing Council of New Zealand (2000a). New Zealand registered nurses, midwives and enrolled nurses: Survey on educational qualifications. Wellington: The Council.

Nursing Council of New Zealand (2000b). New Zealand registered nurses, midwives and enrolled nurses: Workforce statistics. Wellington: The Council.

Pettengill, M., Gillies, D., & Chambers Clark, C. (1994). Factors encouraging and discouraging the use of nursing research findings. IMAGE: Journal of Nursing Scholarship, 26(2), 143 - 147.

Polit, D. (1996). Data analysis & statistics for nursing research. Stamford, Connecticut: Appleton & Lange.

Polit, D. (1997). Essentials of nursing research: Methods, appraisal, and utilization. Philadelphia, New York: Lippincott.

Pond, E., & Bradshaw, M. (1996). Attitudes of nursing students toward research: A participatory exercise. Journal of Nursing Education, 35(4), 182 - 185.

Retsas, A., & Nolan, M. (1999). Barriers to nurses' use of research: An Australian hospital study. International Journal of Nursing Studies, 36(4), 335 - 343.

Retsas, A. (2000). Barriers to using research evidence in nursing practice. Journal of Advanced Nursing, 31(3), 599 - 606.

Rizzuto, C., Bostrom, J., Suter, W., & Chenitz, W. (1994). Predictors of nurses' involvement in research activities. Western Journal of Nursing Research, 16(2), 193 - 204.

Rogers, E. (1995). Diffusion of innovation. (4th ed.) New York: The Free Press.



Rodgers, S. (1994). An exploratory study of research utilisation by nurses in general medical and surgical wards. Journal of Advanced Nursing, 20, 904 - 911.

Rolfe, G. (1994). Towards a new model of nursing research. Journal of Advanced Nursing, 19, 969 - 975.

Rolfe, G. (1996). Going to extremes: Action research, grounded practice and the theory-practice gap in nursing. Journal of Advanced Nursing, 24, 1315 - 1320.

Rutledge, D., & Donaldson, N. (1995). Building organisational capacity to engage in research utilization. Journal of Nursing Administration, 25(10), 12 - 16.

Sarnecky, M. (1993). Inventing nursing research. Nursing Research, 42(5), 318 - 319.

Schofield, M., & Jamieson, M. (1999). Sampling in quantitative research. In V. Minichiello, G. Sullivan, K. Greenwood, & R. Axford (Eds.), Handbook for research methods in health sciences (pp. 148 - 171). Sydney: Addison - Wesley Longman Australia Ltd.

Seers, K., & Friedli, K. (1996). The patients' experiences of their chronic non-malignant pain. Journal of Advanced Nursing, 24, 1160 - 1168.

Sigsby, L., & Bullock, L. (1996). Nursing education and research in New Zealand. IMAGE: The Journal of Nursing Scholarship, 28(3), 269 - 72.

Stetler, C. (1983). Nurses and research: Responsibility and Involvement. National Intravenous Therapy Association, 6(5), 18 - 23.

Stetler, C. (1994). Refinement of the Stetler/Marram model for application of research findings to practice. Nursing Outlook, 42(1), 15 - 25.

Stetler, C., Brunell, M., Giuliano, 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.

Stevenson, J. (1987). Forging a research discipline. Nursing Research, 36(1), 60 - 64.

Story, J. (1999). A brief survey of univariate group comparison procedures. In V. Minichiello, G. Sullivan, K. Greenwood, & R. Axford (Eds.), Handbook for research methods in health sciences (pp. 499 - 528). Sydney: Addison - Wesley Longman Australia Ltd.

Swansburg, R. (1995). Nursing staff development. Boston, London: Jones and Bartlett Publisher.

Thompson, C., McCaughan, D., Cullum, N., Sheldon, T., Mulhall, A., & Thompson, D. (2001a). The accessibility of research-based knowledge for nurses in United Kingdom acute care settings. Journal of Advanced Nursing, 36(1), 11 - 22.

Thompson, C., McCaughan, D., Cullum, N., Sheldon, T., Mulhall, A., & Thompson, D. (2001b). Research information in nurses' clinical decision-making: What is useful? Journal of Advanced Nursing, 36(3), 376 - 388.

Unsworth, C. (1999). Descriptive and exploratory data analysis. In V. Minichiello, G. Sullivan, K. Greenwood, & R. Axford (Eds.), Handbook for research methods in health sciences (pp. 480 - 498). Sydney: Addison - Wesley Longman Australia Ltd.

Van Mullen, C., Burke, L., Dohmeyer, K., Farrell, M., Harvey, S., John, L., Kraly, C., Rowley, F., Schern, M., Twite, K., & Zapp, R. (1999). Strategic planning for research use in nursing practice. Journal of Nursing Administration, 29(12), 38 - 45.

Walker, J. (1998). The transition to registered nurse: The experience of a group of New Zealand degree graduates. Nursing Praxis in New Zealand, 13(2), 36 - 43.

White, J. (1995). Models and process of research utilization. Nursing Clinics of North America, 30(3), 409 - 421.

Wilson-Barnett, J., Corner, J., & De Carle, B. (1990). Integrating nursing research and practice - The role of the researcher as teacher. Journal of Advanced Nursing, 15, 621 - 625.

Wood, P. (2001). A century of registered nursing in New Zealand 1901 - 2001. Nursing New Zealand, Centenary Souvenir, 6 - 10. Wellington: Nursing Council of New Zealand.

Zaltman, G., Duncan, R., & Holbek, J. (1973). Innovations and organizations. New York: John Wiley & Sons.

**Introduction and Information Letter to Questionnaire**  
**Barriers to and Facilitators of Research Use in Clinical Practice**

Dear Colleague,

My name is Petra Stolz-Schwarz and I am enrolled as a Masters student at Massey University, School of Health Sciences, Palmerston North. As well as studying at Massey University I am also working as a part time staff nurse in ICU at Wellington hospital.

I would like to invite you to take part in a research study I am carrying out for my Masters thesis work. The study has been reviewed and approved by the Wellington Ethics Committee and the Massey University Human Ethics Committee, Palmerston North. The study focuses on barriers to and facilitators of research use of nurses in clinical practice. The questionnaire used for data collection has different areas of concerns. There are two pages requesting demographic information and there are three pages with possible barriers/facilitators to your use of research in clinical practice.

The questionnaire takes 15 minutes to read and complete. If you decide to participate, please do not put your name on the questionnaire. You should know that answering and returning the anonymous questionnaire implies that you have given your consent. Implied consent will also mean that I can use the results of the research to complete my Masters thesis. As part of completion of my Masters Degree I will also publish the results of the research. A summary of the results will be circulated in the staff newsletter at your work site after completing the study. The completed thesis will be on loan at all campus libraries of Massey University in Auckland, Palmerston North and Wellington. Copies of the thesis will be held at the nursing library of Wellington hospital and the Library of Whitireia Community Polytechnic, Porirua.

## **Participant Rights**

- Participants have the right to refuse to answer any questions;
- Participation in the study is voluntary;
- You can decline to participate if you want to;
- You can withdraw from the study at any time. However you should be aware that once completed and returned the questionnaire cannot be withdrawn from the study;
- It is assumed that filling in and returning the questionnaire implies your consent to take part in the study; and
- You have the right to receive information about the study and its results by contacting the researcher or her supervisor for this.

## **Risks and Benefits**

- Completion or non-completion of the questionnaire has no bearing whatsoever on your status and rights as a Registered Nurse at Wellington Hospital.
- After reading the results you will have a better indication of the barriers to and facilitators of use of research for registered nurses at Wellington hospital.
- The research may stimulate some useful reflection on your clinical practice and the potential benefit of research to your clinical practice.
- To the best of my knowledge, there are no risks if you decide to take part in this research project.

## **Questionnaire Distribution, Collection and Data Analysis**

I have asked team leaders to assist with questionnaire distribution to nurses on the wards of Wellington Hospital. The questionnaires can be returned anonymously in the freepost envelope provided.

Replies returned after **30 November 2000** cannot be included for analysis. Please note if you choose to fill out a questionnaire I would like to ask you to do this either in one of your breaks from work during the day, or in your own time. I will send out a reminder note to each ward two weeks before the final date for return of the questionnaires.

The returned questionnaires will then be collated and stored in a secure, locked place. Data will be accessible by myself and by my research supervisor at Massey University only. Please feel free to contact us for any questions or suggestions you might have relating to the research or the questionnaire.

Kind regards,

Petra Stolz-Schwarz, Staff Nurse ICU

p.stolz.schwarz@xtra.co.nz

**Research Supervisor:**

Tony O'Brien, Senior Lecturer

School of Health Sciences,

Massey University

Palmerston North

Ph. 06 350 5799 ext. 2243

## Demographic Data

Completing and returning this questionnaire to the researcher implies consent.



Age in years:

Female:  Male:

### What is your first (basic) registration qualification in nursing?

Hospital Trained RN/RGON/RPN:

Polytech Diploma RCpN:

BN/BM Degree:

Year of Initial Registration: 19

Did your first nursing program have a research module?

Yes:  No:

### What is your highest professional qualification?

As above:

BN/BHSc/BA(Nurs):

MN/MA(Nurs)/MHSc:

Do you have any other Post Registration Certificate/Diploma/Degree  
(please, specify):

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Did your post registration education program include a research module?

Yes:  No:

Researcher use  
only, Please  
leave blank

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Please continue on next page

**Work Area:**

Medical:  Surgical:  Gyn/Obstetric:

CCU:  ICU:  Paediatrics:

AT & R:  Other (please, specify): \_\_\_\_\_

**Designation:**

Staff Nurse:  Charge Nurse/Team Leader/Clinical Co-Ord:

Nurse Educator/Clinical Nurse Specialist:

Other (please, specify): \_\_\_\_\_

How many hours do you work on average every 2 weeks?

Have you ever participated in a nursing research project?

Yes:  No:

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:

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

No, never:

Please, leave  
blank

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**Thanks for taking time to fill this out.  
Please continue on the next pages with the questionnaire.**





## Barriers to and Facilitators of Research Use in Clinical Practice

Answers in the questionnaire can be given using the 4-point scale provided. The scale measures the extent to which you think the items are a barrier for you to use research in clinical practice.

1= Not at all, 2 = Little, 3 = Moderate, 4 = Great

	1. not at all	2. little	3. moderate	4. great
Exp. Research journals are not available at my work place.		✓		

If you think that the fact that **research journals are not available at your work place is a little barrier to your use of research** in clinical practice you would place a ✓ (tick) in box2.

### INSTRUCTIONS:

Indicate to what extent the following items are a barrier for you to use research in clinical practice.

1. Lack of awareness.	1. not at all	2. little	3. moderate	4. great	
2. Being isolated from knowledgeable colleagues with whom to discuss research.	1.	2.	3.	4.	
3. Not feeling capable of evaluating the quality of research.	1.	2.	3.	4.	
4. Feeling the benefit for practice will be minimal.	1.	2.	3.	4.	
5. Seeing little benefit for self.	1.	2.	3.	4.	
6. Unwillingness to change/try new ideas.	1.	2.	3.	4.	
7. Not perceiving the need to change practice.	1.	2.	3.	4.	
8. Not seeing the value of research for practice.	1.	2.	3.	4.	

Researcher Use Only. Please leave blank

**INSTRUCTIONS:**

Indicate to what extent the following items are a barrier for you to use research in clinical practice.

Please,  
leave  
blank

9. Insufficient authority to change patient care procedures.

1. Not at all	2. little	3. moderate	4. great

10. Insufficient time on the job to implement new ideas.

1.	2.	3.	4.

11. Physicians not co-operating with new implementation.

1.	2.	3.	4.

12. Administration not allowing implementation.

1.	2.	3.	4.

13. Other staff not being supportive of implementation.

1.	2.	3.	4.

14. Research results are not generalizable to own setting.

1.	2.	3.	4.

15. Inadequate facilities for implementation.

1.	2.	3.	4.

16. Insufficient time to read.

1.	2.	3.	4.

17. Research has not been replicated.

1.	2.	3.	4.

18. Uncertainty about the believability of the results of the research.

1.	2.	3.	4.

19. Literature reports conflicting results.

1.	2.	3.	4.

20. Methodological inadequacies of the research.

1.	2.	3.	4.

21. Research articles/reports are not published fast enough.

1.	2.	3.	4.

22. Conclusion drawn from the report are not justified.

1.	2.	3.	4.

Please, leave blank

- |   | 1.<br>Not at all | 2.<br>little | 3.<br>moderate | 4.<br>great |
|---|------------------|--------------|----------------|-------------|
| 23. Statistical analysis are not understandable.          |                  |              |                |             |
| 24. The relevant literature is not compiled in one place. |                  |              |                |             |
| 25. Implications for practice are not made clear.         |                  |              |                |             |
| 26. Research reports are not readily available.           |                  |              |                |             |
| 27. Research is not reported clearly and readably.        |                  |              |                |             |
| 28. Research is not relevant to nurse's practice.         |                  |              |                |             |

Please state any other things, for example cultural matters, that you feel are **barriers** for you to use research in clinical practice:

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Please state any thing that you think is/could be a **facilitator** for you to use research in your practice:

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**Thank you very much for having taken the time to fill out this questionnaire.**

**You can return it in the pre paid, pre addressed envelope that is provided for your convenience.**

**Replies after 30 November 2000 cannot be included in the study.**



**Kind regards,**

**Petra Stolz-Schwarz, [p.stolz.schwarz@xtra.co.nz](mailto:p.stolz.schwarz@xtra.co.nz)**

**Contact & Mail to c/o Tony O'Brien, Senior Lecturer**

**School of Health Sciences, Massey University,  
PALMERSTON NORTH Ph 06 350 5799 extn 2243**



## Barriers to and Facilitators of Research Utilisation in Clinical Practice

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Dear Colleagues,

about two weeks ago you had the opportunity to receive a questionnaire package for a nursing research study. The study is concerned with barriers to and facilitators of research use in clinical practice. I am carrying out the research for my Master's thesis work at Massey University, Palmerston North.

I would like to invite you again to participate in the research by completing and returning your questionnaire and remind you that questionnaires returned after 30 November can not be included in data analysis.

Thank you very much for your interest. Please feel free to contact me or my research supervisor with any questions you might have regarding the questionnaire packs or the research in general.

Kind regards,

Petra Stolz-Schwarz, Staff Nurse ICU/CRNU

p.stolz.schwarz@xtra.co.nz

Supervisor: Anthony P. O'Brien, Senior Lecturer

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