

**RESEARCH UTILISATION BY NURSES IN  
GENERAL MEDICAL AND SURGICAL WARDS**

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## **DECLARATION OF OWNERSHIP OF THE THESIS**

I declare that this thesis has been composed by me, and that the study presented was directed by me and that I made substantial contribution to its conduct.

The work presented in this thesis has not been submitted for any other degree or professional qualification.

Sheila Rodgers

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## PREFACE

The study reported in this thesis comprises part of a larger project of research utilisation in nursing that was funded by the Chief Scientist Office of the Scottish Office Home and Health Department. The author was the sole grant holder and the principal investigator and so directed the project and made substantial contribution to the conduct of the project. A research assistant and a secretary were employed on this grant and contributed to the conduct of some parts of the project. The main contribution of the research assistant to the study reported in this thesis was; the conduct of interviews with structured interview schedules prepared by the author, the collation of lists of nurses' names for the survey, and data inputting along with the secretary (samples of which were also checked by the author).

The literature reviewed in Chapters 1 to 4 of this thesis predates the study. Since the inception of the study, there has been an explosion in literature on research utilisation and on research-based and evidence-based practice. Selected, relevant literature that postdates the study is used to inform the discussion where appropriate.

The writing up of this thesis has been interspersed with periods of maternity leave. In the meantime some of the findings of the study have been presented at conferences, including conferences arranged for the participants in the study. Some findings of the study have also been published with the permission of the supervisors. Copies of these published papers are included in Appendix 1.

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## **ABSTRACT**

There has been extensive speculation about the lack of research utilisation in nursing but little attempt to quantify this phenomenon outside of North America. The current demands for evidence-based practice necessitate research utilisation as one element of that process. The study reported in this thesis aimed to investigate the extent to which nurses utilise research and further, to identify factors that promote and those that hinder research utilisation. The study was limited to nurses working in general medical and surgical wards.

The study comprised a survey on the extent of research utilisation and potential influencing factors, and follow up interviews to explore the effect of identified influencing factors on research utilisation.

Seventy three percent (680/936) of the nurses returned questionnaires to measure the level of utilisation of 14 research-based practices and assess the presence of potential influencing factors. The total mean research utilisation score for all nurses across all 14 nursing practices suggests that on average, nurses had heard of, believed in and were beginning to use the practices. Several factors were significantly associated with research utilisation including completion of higher education, studying research, reading research-based journals, surgical rather than medical nursing, the organisational culture and management style, the promotion of accountable practice, a clear strategy for research at nursing management level, hospital size and nursing skill mix. These were further explored in the interviews. The discussion of the findings focuses on those that illuminate the influence of both the individual and the organisation on research utilisation and also consider the interaction between individual practitioners and the organisation.

# CHAPTER 1

## INTRODUCTION

“The effective dissemination and implementation of research is currently big business across the health service” (Cullum 1996 page 119).

The dissemination and utilisation of research findings has become of great interest to practitioners, managers and policy makers in all areas of the health service. Previously, the efforts of individuals were relied upon for dissemination and utilisation but this has been haphazard and ineffective (Department of Health 1995). A view now exists that nursing must become research-based to bring about effective and efficient patient care and for nursing to move further towards professional practice.

There is perhaps a misconception that many of the traditional professions are already research-based. Law practice has relied heavily on case studies whilst in medicine only 15% of medical interventions carried out in the NHS in the UK have been proven to be effective in improving the health of patients (Smith 1991). In nursing, little evidence exists on the extent of research utilisation although there has been extensive speculation about ritualistic practice (Walsh and Ford 1989). Nursing has been beset by the assumption that if researchers identify an area of interest, conduct and publish research, practising nurses will read it and use it. This assumption must be challenged if nursing is to move forward to become a research-based profession.

This study examines the extent of research utilisation by nurses and compares this to the findings of existing studies of research utilisation. Further, it examines factors that promote and hinder research utilisation, the findings of which might inform future strategies to promote research utilisation.

This chapter begins by giving an outline of the thesis. The background to research utilisation in nursing is then discussed, charting the development of research-based

practice in nursing and arguing for studying the problem of lack of research utilisation as an organisational one. An outline of the extent of research-based practice in the health service in general is then given. Finally the impact of recent NHS policies on nursing research utilisation is examined and concepts of effectiveness and efficiency and evidence-based practice introduced.

## **OUTLINE OF THE THESIS**

Chapter 1 begins the thesis by setting the scene for research utilisation in nursing in the context of the health service. Chapter 2 explores the meaning of research utilisation through an analysis of definitions and models of research utilisation. Rogers (1983) model of the diffusion of innovations is argued as most appropriate to this study of research utilisation in nursing.

Research utilisation requires sufficient research on which to base practice, and that this research is communicated to practising nurses. Chapter 3 firstly argues that there is sufficient research on which to base practice in some areas of nursing and, indeed, that in some areas the volume of research being reported is overwhelming. Secondly, the process of dissemination of research is discussed with a review of some approaches to dissemination and problems associated with them.

However, it cannot be assumed that knowledge of research findings will automatically lead to their use. Chapter 4 focuses on the utilisation of research by nurses and its implementation into practice. Few UK studies of research utilisation have been conducted and are mostly descriptive in nature, whilst some North American studies have examined the use of specified research findings. The different approaches to studying the extent of research utilisation are critiqued and their relevance to a UK context examined. What might influence research utilisation is then discussed. These influences are argued to be complex and include those at an organisational level and those that concern the individual.

As no study of the utilisation of specific research findings had been conducted in the UK, a study of the extent of research utilisation and the factors that might influence it is proposed in Chapter 5. The findings of the study are reported in Chapter 6 and a selection of the findings is discussed in Chapter 7.

## **THE DEVELOPMENT OF NURSING RESEARCH**

The Briggs report is generally acknowledged as the first time that the call for nursing to become a research-based profession was made publicly (Briggs 1972). Knowledge derived from practice and experience was previously sufficient to justify practice, but there has been an increasing drive for knowledge derived from research as the basis for practice over the last 25 years. Luker and Kenrick (1995) argue that nurses are now “under an implicit and sometimes explicit obligation to demonstrate that they are acting according to the most up to date and available knowledge, and there is now an expectation that health care should be informed by research as well as practice based knowledge” (page 60).

Research-based practice is not only required for professional accountability, but also politically required in order to make the best use of available resources and link clinical and cost effectiveness, and to involve and inform patients. Nursing research is then essential for accountable professional practice and practice that is clinically effective and efficient. However doubts have existed for some time as to whether there is a sufficient body of research knowledge in nursing on which to base practice.

Around the same time as the Briggs report was produced, the Royal College of Nursing supported several studies in nursing research such as Franklin (1972), ‘Nil by mouth’ and LeLean S (1973), ‘Ready for report nurse’. A whole series of studies on mainly clinical topics was produced with the aim:

“To encourage the appreciation and dissemination of nursing research by making relevant studies of high quality available to the profession at reasonable cost”.

However, Clark and Hockey (1979) found only a limited number of studies relating to patient care to be readily available. Nursing Research Units had begun to be established in Universities from the mid 1970s enabling larger studies and doctoral work in nursing to be developed. In 1981 Hunt stated that there was at least some research which could provide a basis for nursing practice, but argued that nurses did not use these research findings as they did not know about them, they did not understand them, they did not believe them, they did not know how to apply them and/or they were not allowed to use them. Whilst this was an insightful statement of the problem and noted as a key discussion paper, the arguments were not based upon any investigation or empirical evidence.

Much of the early literature in research utilisation focused on the characteristics of individual nurses rather than of the organisation in which the nurse was working, on the assumption that utilisation of research was an individual responsibility (Champion and Leach, 1989). Several studies have collected elements of demographic and personal details but few relationships with research utilisation have been found.

## **HOSPITALS AS ORGANISATIONS**

In 1990, MacGuire first began to question the focus on personal responsibility for the application of nursing research. She argues that intentional change in large organisations is complex and requires more than attempts to modify the attitudes and behaviours of individuals. Peters (1992) defines an organisation as stable groups of people who come together work co-operatively toward common goal in structured manner. MacGuire (1990) believes that hospitals, as organisations, do not have one single common goal, but consist of several occupational groups with divergent goals. Even within occupational groups such as nurses, a common objective cannot be assumed.



There are many different organisational and occupational groupings in the NHS with units and services divided into many levels. Williamson (1992) argues that this fragmentation hinders change, as there are no mechanisms to bring groups of staff together. Yet hospitals, as organisations, have formal sets of rules and regulations and also informal networks and social relationships which are equally, if not more important than formal ones. Peters (1992) argues that individuals, the task, and the formal and informal organisation must be addressed if change is to succeed. These four elements are viewed as being in dynamic equilibrium so that a change in one results in a shift in the other, which will resist change with some predictability. MacGuire (1990) describes such resistance to change as the 'shifting sands' syndrome where numerous barriers to change seem to become apparent.

Peters (1992) suggests that teaching hospitals may be more aware of recent research as staff work towards promotion and because strong links with academic departments exist. This may be the case for medicine but whether nurses in teaching hospitals are more aware of research than those in non-teaching hospitals is unclear. In non-teaching hospitals and 'peripheral' hospitals staff may read and be up to date but lack the culture and support to act upon research (Peters 1992).

By 1995, the futility of relying on the efforts of individuals to introduce research-based practice was acknowledged by the British government. A strategy for more active implementation of research through policy and organisational approaches came into force (Department of Health 1995).

## **THE EXTENT OF RESEARCH-BASED PRACTICE**

Whilst knowledge advances ahead of practice, the availability of research does not always mean that it is used (Department of Health 1995). There has been a slow uptake of research findings in many areas of health care. The translation of research into practice may take decades in both medicine and nursing, e.g. the use of steroids in pre-term labour (Crowley Chalmers & Keirse 1990), and prolonged pre-operative fasting times (Franklin 1972, Thomas 1987, Chapman 1996).



There have been several attempts in medicine to quantify the extent of research-based practice in the health service through examining the research basis of treatment decisions. In 1991, Smith estimated that only 15% of medical interventions carried out in the NHS in the UK have been proven to be effective in improving the health of the patient. However, this much quoted figure has been challenged by the work of Sackett (1995) who found that they could treat 53% of the patients on the basis of experimental studies and a further 29% on the basis of convincing non-experimental evidence. Similar figures for nursing do not exist and indeed would be inappropriate given the nature of nursing practice. Attempts to measure the extent of research-based practice in nursing have been either more focused or indirect. [These studies are considered in depth in Chapter 4.] Taking into account research costs and methodological issues, Baker (1996a) contends that a target of 50% of interventions as research-based would be realistic and a great advance on current practice.

Such figures take no account of whether research findings are being used systematically or appropriately. Hunter and Polit (1992) argue that research tends to be used to support decisions already made, or that findings are extrapolated from one clinical situation to another without trials or evaluation (Peckham 1991). Clinical staff also tend to favour research on innovations rather than evaluating existing practices or getting existing research into practice, as this may threaten what they already do. However, Baker (1996a) says, “the greater benefits to managers, and often to patients too, comes from the slaughter of sacred cows” (page 25).

Research has tended to focus on new procedures with the assumption that older ones must be effective if carried out by professionals. Now there is some doubt about their effectiveness and, with greater public accountability, scrutiny is falling on these practices too. However, the nature of the client-professional relationship is based upon the client trusting that the health professional knows what he/she is doing, so the client's ability to question it may be somewhat limited. It is essentially then the responsibility of the professionals to be able to demonstrate publicly the worth of their

practice. Savage (1990) and Baker (1996a) believe that this increased public accountability will form the foundations of professional status in the future.

The focus of research-based practice tends to be at the level of individual practitioners and clinical practices yet many practices and changes in practice are driven by policy. One might expect then that policy would be informed by research, however Hunter and Polit (1992) argue that the use of research and its influence in health policy has been minimal at even the highest level in Government:

"the direct deliberate and systematic use of research findings is so rare as to be negligible" (Hunter and Polit 1992 page 164).

Baker (1996b) cites major changes in policy and practice made without regard to research such as those of general management, resource management, the purchaser provider split, and GP fund holding. Closs and Cheater (1994) agree that many policy and other changes in the in the NHS are not based on research evidence, and further argue that in some cases where research had been used, it has been used inappropriately; for example the use of research findings of Benner (1984) in the assessment of performance of pre-registration nurses.

## **THE IMPACT OF NHS POLICIES**

In 1988 the House of Lords Select Committee on Science and Technology were openly critical of government funding and management of public health research, and in particular the lack of a coherent strategy for NHS research. This report, along with an increasing intolerance of variations in clinical practice and outcomes (MacPherson 1994, Baker 1996a) led to the development of the first strategy for Research and Development (R&D) in the NHS in 1991. The strategy aimed to move health care to become based on relevant, high quality research (Department of Health 1991).

"The prime objective is to see that R&D becomes an integral part of health care so that clinicians, managers and other staff find it natural to rely on the results of research in their day to day decision making and longer term

strategic planning. Strongly held views based on belief rather than sound information still exert too much influence in health care. In some instances the relevant knowledge is available but is not being used, in other situations additional knowledge needs to be generated from reliable sources” (Department of Health 1991 page 1).

There was a sense that the NHS had not been able to influence research for its own needs. The Department of Health was providing around only 15% of research funding, hence the other funding bodies (charities, research councils and industry) were very much driving the direction of research. However, the level of overall funding for NHS research was not addressed. In the early 1990’s private companies spent far more on R&D than the health service. For example, IBM spent around 10% compared to the NHS at 1.5% with Health Boards spending even less (Peters 1992). Despite the relative paucity of funding, Peters goes on to point out that there would only have to be implementation of what is already known from current research to give significant improvements in health without conducting any further research. It seems then that the implementation of research would be a crucial for the success of the new policy.

Within the R&D strategy, research was proposed to look at how to promote the uptake of good projects once developed and evaluated in clinical trials along with an information strategy and a projects register to centralise information about ongoing and completed research. Priority areas for research were identified as cardiovascular disease, cancer and respiratory disease as the three main causes of life years lost, with mental illness costing most to the NHS.

Sir Michael Peckham (the Director of R&D) had firm views that health service practice should become research based with new approaches being carefully trialed and evaluated against existing practices. He advocated extended trials to take into account economic feasibility and also commercial viability (Peckham 1991). This policy was to a great extent driven by the need for cost containment. This continues to be a strong motivating factor as escalating costs outstrip resources. There are also rapid technological developments in health care, and alongside the need to introduce objectivity into health care services planning and seeing the patient as an informed

consumer, have all raised the profile of quality issues. All of these factors drive the need for a research-based health service (Luker and Kenrick 1995).

In 1991 the Strategy for Nursing Research in Scotland was published (Scottish Office Home and Health Department, SOHHD 1991) although a Research Strategy for the NHS in Scotland was not forthcoming until 2 years later (SOHHD 1993). In this Strategy for Nursing Research, the move toward research utilisation was supported although there was little comment on how this was to be achieved. Who was to take responsibility for the process was not defined nor what resources would be available. In contrast Closs and Cheater (1994) argue that the English strategy for Nursing Research (Department of Health 1993) placed more emphasis on the development of a research culture by health service managers.

In 1995, twenty priority areas for research were identified for study covering many aspects of research utilisation (Department of Health 1995). Throughout the report, the orientation is stated as health services research yet the detail refers to clinicians and relies heavily on publications relating to the implementation of medical research. Whilst many of the priority areas could be of equal concern to nursing and midwifery practice, the tone of the report is clearly medically focused and the relevance for nursing, midwifery and professions allied to medicine (PAMs) is only established in a few of the priority areas. These priorities have now been used to set the research agenda in the study of dissemination and implementation of research in the Health Services.

## EFFECTIVENESS AND EFFICIENCY

In the drive for cost containment and value for money, effectiveness and efficiency have become key goals of the health service. Clinical effectiveness would seem to be based upon the application of sound research to practice. However, several definitions exist and other similar terms co-exist.

Effectiveness may be defined as the likelihood of desired outcomes resulting from some type of intervention whereas clinical effectiveness is the likelihood of desired relevant clinical outcomes. Clinical effectiveness has been described as;

“The extent to which specific clinical interventions when deployed in the field for a particular patient or population do what they are intended to do i.e. maintain and improve health and secure the greatest possible health gain from the available resources” (NHS Executive 1996a page 4).

Efficiency concerns the value and extent of the outcome compared to the costs of carrying out the intervention. The costs should include not only financial costs and the time of health care staff involved but also the costs to the patient in terms of any undesired effects. Efficiency is not just about whether something is value for money although this is an important part, especially in policy and resource allocation decisions. Deykin and Haines (1996) caution against an assessment of effectiveness alone and argue that effective practices can be used inappropriately or with the wrong client group. Appropriateness is a more subjective but essential factor to be taken into consideration.

The term ‘evidence-based practice’ is also used to describe practice based on information or knowledge. French (1996) sees evidence-based practice as synonymous with research-based practice. However, many different types of evidence can and have to be used as a basis for practice. Mulhall (1996) argues that knowledge is not only derived from empirical research but also from nursing theory and clinical knowledge encompassing both life events and nursing experience.

Personal experience and anecdote can lead to strong personal beliefs, which can significantly influence practice. Closs and Cheater (1994) argue that too much health service practice is based upon personal belief rather than research-based evidence. However, when experience includes a process of reflection, analysis and evaluation this can lead to the development of great expertise on which much of health care has been based. There are some difficulties with this in that extraneous variables may lead to incorrect conclusions, or that one is not sufficiently critical in the analysis of the experience. There is a need for thorough reflection and analysis as well as much caution when relying on personal evidence.

When research is generalised, one makes assumptions about what might happen in similar prescribed circumstances. When there is no research, expert opinion may have to be used as an external guideline to practice. However, patient opinion and preferences and expert opinion will temper the utilisation of research as only the expert, knowledgeable, practitioner can assess the particular circumstances (Sackett et al 1997). Individual cases are not only complex and multifactorial but also subject to the patient's informed choice and moral and ethical decision-making. Malby (1996) summarises the position of evidence-based practice in nursing as embracing three main elements; the evidence, patient wishes and the expertise of the carer.

“Nursing particularly attempts to balance the implementation of measures demonstrated to improve health with a sensitivity and regard for the impact of patient beliefs, attitude, self perception and awareness, cultural and spiritual experience, and personal responsibilities as well as the impact of the treatment and care environment coupled with the individual’s willingness and ability to learn” (Malby 1996 page 71).

Levels of probability of outcome or numbers needed to treat can be applied to populations but when a practitioner is caring for an individual, this information has to be considered alongside the expert assessment of the patient by the practitioner and the patients’ wishes. Policy makers and purchasers may find the ‘evidence’ more compelling when considering a generic issue or a population where it must have economic, professional and social benefit (Cavanagh and Tross 1996).

Evidence-based practice is then politically required in order to make the best use of available resources, including technology and to link clinical effectiveness and cost efficiency. Professionally, it is required for accountability, to promote research-based practice and to involve and inform patients.



## CHAPTER 2

### **MODELS OF RESEARCH UTILISATION**

This chapter aims to explore the meaning of research utilisation, firstly by providing definitions and secondly through analysis of models of research utilisation. A case is then made for reliance upon Rogers (1983) model of innovation adoption as a framework to underpin this study of research utilisation in nursing.

#### **DEFINITIONS**

Stetler (1985) offers a delightful definition of research utilisation as ‘to use research’ but does go on to argue that such a definition is insufficient for the complexities of nursing research utilisation. In the USA, early studies of research utilisation in the 1970s took the definition to be use of ‘findings’ (Stetler 1985). Since then many terms and definitions have appeared. Firstly it is important to distinguish between the communication of research findings (dissemination) and the use of findings (implementation).

Dissemination is concerned with transmitting the information to the relevant audience in order to influence their awareness and knowledge. Rogers (1983) distinguishes ‘diffusion’ from ‘dissemination’ on the basis that dissemination is a planned and managed one-way flow of communication. Diffusion on the other hand is spontaneous and happens in a less structured way. Rogers argues that in practice, it is difficult to tell whether the information flow is spontaneous or managed and so opts for the term diffusion as encompassing both planned and unplanned dissemination. In UK health care literature it is more usual to use the term dissemination and perhaps neglect spontaneous unplanned diffusion of new knowledge. As knowledge gained in both manners may impact on thinking and



practice, it would seem preferable to broaden the definition of dissemination within this study to include all types of communication about research evidence. No assumptions are made that the information about research reaches its target audience, nor that the information is absorbed or used.

Implementation on the other hand is concerned with the knowledge influencing decision-making and practice or 'putting it into practice'. However, several authors have argued that research can be utilised not only in behavioural terms, but also in guiding one's thinking and understanding of a subject or issue (Closs and Cheater 1994). Once the information is received, accepted and then integrated into one's own thinking as a useful addition, it is argued that this is a form of utilisation. Cronenwett (1987) argues that descriptive studies can improve nurses' abilities to assess problems and to analyse interventions from a new perspective. Studies such as those of 'the unpopular patient' (Stockwell 1972) or hospitals as institutions (Goffman 1961) would be classic examples. Whilst the research does not provide new information about interventions to be used in practice (i.e. technology), it is thought provoking and enlightening. Stetler and Marram (1976) identify such use of research as cognitive application whereas Tierney (1991) describes it as indirect use of research. In contrast, the implementation of findings of research is described as being action utilisation (Stetler 1985) or direct use of research (Tierney 1991). Richardson et al (1990) recognised research that might be of indirect use or illuminating. However subsequent policy papers have neglected this important application of research.

Krueger et al (1978) identified a further, direct use of research when nurses incorporated tools and methods from research into their practice. Tierney (1991) argues that this is an important area of research utilisation yet it is perhaps a neglected outcome of much nursing research.

Utilisation then depends upon new knowledge from research being disseminated, in either a planned or unplanned way. Utilisation includes both indirect or cognitive use

of research, and direct use of research including the implementation of findings and methods from research. This definition of research utilisation is considered useful for the purposes of this study in nursing practice but it may be limited in terms of the utilisation of health services research in influencing policy matters.

## **READINESS OF RESEARCH FOR UTILISATION**

There has been some debate in the literature as to what forms of research-based knowledge are ready for incorporation into practice. Changing practice on the basis of any one study no matter how well conducted would be foolhardy (McIntosh 1995) but many studies in nursing have been one-off small-scale studies often conducted as course requirements, with little attempt at replication (English 1994). McIntosh (1995) also argues that there is a lack of critical mass of research within subject areas. This may be due in part to inadequate funding and lack of a career structure within nursing research (Mulhall 1995). Research is often short term and not followed up or developed leading to fragmented shallow knowledge and a disparate literature. Robinson (1987) concurs with this view arguing that a series of studies in an area may be needed with adequate time for analysis and synthesis of theoretical and practical outcomes. There is however an information overload in some areas such as continence care and pressure area care but a dearth of research in others (MacGuire 1990). This lack of synthesis of research findings is beginning to be addressed in part, by the information strategy proposed in the R&D strategy (Department of Health 1991). Systematic reviews are being undertaken in discrete clinical areas whilst research using randomised controlled trials is subject to meta-analysis as a method of combining the results of more than one study. (See Chapter 3 for further discussion.)

## **MODELS OF RESEARCH UTILISATION**

Models of research utilisation have been used both to conceptualise and order thinking and also to structure attempts at introducing research based practice (Crane 1985). Several different models have been described and these are discussed below in terms of their relevance to the proposed study.

### **Knowledge Driven Model**

In the knowledge driven model or rational deductive approach, new knowledge is created, made known and then use is assumed. Research and development follow a logical sequence and diffusion and utilisation are expected to follow due to the inherent merits of the research itself. Williamson (1992) suggests that failure results if practitioners do not perceive there is a problem that requires change and so may dismiss the research as of no consequence. Kitson et al (1996) argue the knowledge driven model neglects the complexity of contextual and organisational factors.

### **Problem-Solving Model**

In the problem-solving model, Williamson (1992) believes that it is evidence from research that provides a solution to a problem. Users define a problem, seek out solutions and apply and evaluate them. However Crane (1985) argues that solutions may not be research-based and that the model relies heavily on the motivation of the users. There is an assumption that finding a solution or an answer to a problem leads to a practice change but the research may not answer a precise local question or it may change the question being asked.

"Thus much research is probably considerably more limited in terms of comprehensiveness and conclusiveness than is being sought by the decision maker" (Williamson 1992 page 79).

Such a criticism may be particularly valid in nursing research where few large-scale co-ordinated multicentre trials exist, whilst conflicting findings may be unlikely to

bring about a practice change and may even be ignored. The problem-solving model also fails to take into account the dissemination of research.

### **Linkage Model**

Hickey (1990) argues that the linkage model takes into account the deficiencies of the problem-solving model in failing to include the dissemination of research as an influence on research utilisation. The linkage model is based on the problem-solving model but the users of research form links with a resource system such as a clinical nurse specialist or nurse researcher to help solve the problem. In this manner two-way communication between the user and resources is achieved. Whilst two major studies of research utilisation in the USA were based upon this linkage model (the Western Interstate Commission on Higher Education, Krueger Nelson et al 1978, and Nursing Child Assessment Satellite Training Project, Barnard and Hoehn 1978) there have been no further reports of studies explicitly based on the model. Studies of the evaluation of clinical nurse specialist roles, or others in facilitator roles (Armitage 1990, Pearcey and Draper 1996) have been reported but do not rely upon this model. Reliance on one mechanism of disseminating information i.e. the resource link, would seem to depend heavily upon the link person's resources and links to others whilst denying other means of accessing information or instigating change.

### **Social Interaction and Diffusion Model**

Crane (1985) also described a model termed the social interaction and diffusion model. This model focuses on the processes through which new knowledge is diffused and adopted by members of a social system. The model takes into account the communication channels, the perceived characteristics of the new knowledge, characteristics of the adopters and factors influencing the success of the diffusion and adoption of the new knowledge. This type of model was first described by Rogers (1962) and Rogers and Shoemaker (1971). Since inception, the model has been developed to take account of planned change and change in organisations. Another adaptation of the model is that by Meyer and Goes (1988). More detailed consideration is given to the social interaction and diffusion models because they

appear to be more suitable to an organisational approach to the study of research utilisation in nursing. Certainly Rogers (1983 and 1995) model of diffusion of innovations has been used more recently in studies of research utilisation in nursing (Brett 1987 and 1989, Coyle and Sokop 1990, Michel and Sneed 1995, Pearcey and Draper 1996).

#### *Meyer and Goes' model*

In 1988, Meyer and Goes reported a study of the adoption of new innovations within medical practice that depend upon technology and equipment. They conducted a six-year-long study looking at the adoption of 12 medical innovations (identified by a panel of experts) in 25 community hospitals. A prerequisite was that the innovation used equipment that was too expensive for the individual to adopt so that organisational processes of adoption could be studied. They describe a model of decision-making in the utilisation of medical innovations with nine stages. In the knowledge awareness stages, colleagues learn of an innovation, consider the merits of the innovation for their organisation and then discuss it. In the next phase of evaluation and choice, a proposal to adopt the innovation is produced and formal budgeting evaluations are made. Whilst medical and financial concerns tend to predominate, the political and strategic concerns are also evaluated in this stage. In the adoption implementation phase the equipment is acquired and the innovation trialed. A decision to accept or reject the innovation is made, potentially followed by wide scale enduring adoption. Each stage from one to nine was scored incrementally within the study to give an overall score of level of adoption.

Within this model it is acknowledged that acquisition of equipment does not ensure utilisation but it is assumed that all innovation adoption is linear and progressive. It could be that some stages are by-passed, for example if equipment is sent on trial without prior knowledge, or there could be movement backwards and forwards between the stages. The possibility that innovations are adopted by the organisation before some staff are persuaded of the value of them is not allowed for. This model is also limited in that the authors specify that the innovation has resource

implications and therefore, must go through formal organisational systems of appraisal and approval. It has already been argued that the utilisation of nursing research goes beyond the direct implementation of findings. Hence resource implications and the purchase of equipment may be irrelevant for the utilisation of some nursing research.

They suggest that there are three factors that determine the assimilation or utilisation of technological innovations:

1. Attributes of organisational contexts including the local environment and hospital characteristics.
2. Attributes of innovations.
3. Attributes arising from interactions of innovations and contexts.

The organisational context was defined as the local environment and the characteristics of the hospital. Environmental measures included measures of urbanisation and of the affluence of the population served by each hospital. Size and complexity of hospital was implicated as affecting the utilisation of innovations. This was measured by the number of beds adjusted for curvilinearity using a log transformation. Complexity was measured by the availability of 24 distinct medical services that required subunits for specialism. This need for many departments and specialities has been defined as horizontal differentiation (Hall 1987). They found contextual factors accounted for around 10% of variance in innovation adoption. Medical innovations were more likely in hospitals in urban environments, and in large complex hospitals with aggressive marketing strategies. They also found that a variable concerned with leadership had no real effect on the adoption of the innovations. They hypothesised that leadership may affect the organisations uptake of innovations but chose to measure length of service and educational preparation of the Chief Executive and the median age of the hospital's medical staff. These do not seem to constitute measures of leadership but were perhaps simply convenient measures of some of the characteristics of managers in the hospitals.



Meyer and Goes (1988) believe that innovations themselves have certain invariant characteristics or attributes which can be assessed. They measured the risk of injury or death associated with the use of the innovation, the level of specialised skill required for the innovation and the extent to which the results of using an innovation are observable. A panel of experts assessed these attributes. Compatibility as a measure of how relevant the innovation was to current specialities was also assessed. However, this was not seen solely as an invariant attribute of the innovation but as an interaction between the context and the innovation. Measures of the attributes of the innovations significantly predicted adoption, accounting for 37% of the variance. When there was high observability of the effect on patients, a low risk of morbidity and mortality, and relatively little skill required, the rates of adoption were increased.

Other variables shown to significantly affect adoption were, being championed by the Chief Executive Officer, being compatible with existing medical specialisation and having a greater number of potential beneficiaries (i.e. a high number of doctors interested in using the practice). The skill to use an innovation was less important if the doctors were recently trained, whilst skill requirements became more important if the doctors trained some time ago. In total these other variables explained 12% of the variance.

Overall, the model explained 59% of the variance in adopting medical innovations and so could be argued a reasonable predictor of adoption. However, almost 40% of this variance resulted from the attributes of the innovations themselves. This might then be an important line of enquiry in assessing the adoption of innovations in a hospital setting. They further reordered the data and assigned an innovativeness score to each hospital in the study. The attributes were necessarily omitted from this part of the study as independent variables. However, this model did predict 74% of the variance in an organisation's innovativeness, with organisational size and complexity and marketing strategy accounting for 42% of the variance. These results indicate the type of hospital that is more likely to adopt a high proportion of medical

innovations rather than the overall circumstances (including the characteristics of the innovations themselves) in which innovations are most likely to be adopted.

This study provides a useful insight into the adoption of medical innovations in a hospital setting but the model developed has severe limitations in its application to nursing research utilisation. These are the dependence on the implementation of findings reliant on the use equipment and the assumption of a strategic organisational approach to adoption that follows a linear progression.

### *Rogers' model*

Rogers (1983) social interaction and diffusion model takes a broader perspective to that of Meyer and Goes (1988). Everett Rogers was a professor of communication studies at the University of Mexico who began writing about the diffusion of innovations in 1962. At that time most diffusion of innovation studies were conducted in the United States and Europe. Since 1962 more studies have been conducted in Latin America, Africa and Asia; and Rogers has modified his diffusion model to take account of these developments (Rogers 1995). The range of innovations he has studied are broad ranging including agricultural (mechanical harvesting of tomatoes, irrigation of rice fields in Bali), traffic management systems (Santa Monica freeway), organisational (airline computer reservation systems, new design teams at Thermos corporation) medicine (new antibiotics, Norplant contraceptive) consumer products (cellular telephones, Nintendo games) and education (drug abuse awareness, new maths curriculum).

Rogers identifies four elements to the process of innovation adoption; the innovation, communication channels, time and the social system. An outline of these elements is given along with an assessment of the model's application to the utilisation of nursing research.



## 1. The Innovation

Rogers (1983) argues that attributes of the innovations themselves must be taken into consideration when analysing the adoption of innovations. An innovation is defined as something that is new or at least new to the recipient of the information. Innovations may or may not be products of research. In clinical practice, innovations frequently centre on new equipment or technology, which can be perceived as new and therefore without implied criticism of current practice (Baker 1996a). Hence, studies of research utilisation have traditionally focused on the adoption of such innovations and neglected the impact of research that may inform and enlighten practice and also influence decision-making. The term 'innovation' might then be considered too narrow for the purposes this study, as there is often a focus on innovations based on new equipment (Glaser et al 1983). However it will be argued that Rogers does recognise both direct and indirect forms of research utilisation and it is clear that research-based practices are encompassed within innovations.

Some innovations may be more attractive, perhaps because of a technological component or because they do not have resource implications or are less threatening to current practice. In both nursing and medicine there are many examples of new developments becoming highly popularised without substantive supporting evidence (laparoscopic hysterectomy, nursing process). On the other hand, some other well founded but less attractive or more difficult practice changes either make no impact, or take a considerable length of time before they are incorporated into practice (thrombolytic therapy in acute myocardial infarction, reduced pre-operative fasting times) (Baker 1996b, Deykin and Haines 1996).

Inherent properties of the innovation may make it more or less appealing and may contribute to the belief that a nurse should or should not use the practice. Such characteristics or attributes seem important in considering whether to adopt a practice or not. Other factors may also be important in the implementation of a practice but exploring implementation is unlikely to occur unless the nurse is persuaded that the practice is one that should be used. Part of the variation in the

utilisation of a nursing practice might then be accounted for by the characteristics or attributes of the practice itself as perceived by the potential adopters. Rogers (1983) classified attributes of innovations into five conceptually distinct but empirically related categories:

- Relative Advantage
- Compatibility
- Complexity
- Trialability
- Observability

Relative advantage is a consideration of what return there is for adopting a practice, and whether this is perceived to be better than the existing practice. One advantage might be in terms of economic profitability in that the innovation has a low immediate cost and saves both time and effort. Profit could be construed in terms of improved patient outcome which may be long or short term. However it is often difficult for nurses to observe feedback on patient outcomes and where it does exist, it can often be too slow to make an impact. For example in preventative care, the effect of care is over a long period of time, which may make it difficult to relate to the action. The value of incentives may be in triggering decisions that hang in the balance, but there is always the risk that the practice may be discontinued once the incentive is removed. Observability and immediacy of outcomes or rewards for using an innovation are then proposed as important factors in assessing the relative advantage of an innovation.

Another advantage of using a research-based practice might be increased social status, which can be highly motivating especially to those who adopt an innovation at an early stage. The status has to be recognised by others and sub groups may vary in what is highly valued (Rogers 1995); for example, care perceived as highly technically skilled and anything requiring high commitment, specialisation, or access

to membership of a group. Once a practice or product becomes widely diffused then the rarity value is lost and the status associated diffused.

Compatibility relates to the extent to which a practice is consistent with existing values, past experience and current need. The new tends to be compared to the old and familiar in order to interpret and assess it. Any new practice must be compatible with cultural values; examples include gender in mixed wards or intimate procedures, and the wearing of trousers by female nurses. A new practice (solution) must be compatible with a current identified need (problem). If potential users cannot identify or specify a problem or need, then they will not be looking for a solution. However, the solution may create a need once nurses realise what a new practice might achieve. The degree of compatibility has to be judged quite finely. The new practice should be a little but not too different. If a practice is too similar to the existing one then it will simply be perceived as the same.

Complexity is concerned with the level of difficulty in understanding and/or using a practice. Practices may be rated on a continuum from complex to simple in understanding and in use. Rogers (1983) suggests that high levels of complexity may be associated with low levels of adoption. It may be that complexity is perceived as high if the research report does not sufficiently simplify the findings or clearly state the implications for practice.

Trialability is described as the ability for short-term experimentation, which can help to reduce uncertainty about a new practice. Trialability is thought to be more important to early adopters as there is no precedent to follow, whereas those adopting a practice later on are able to judge the practice on the trials of the early adopters.

Observability relates firstly to the outcomes of using a practice being visible so that a relative advantage can be perceived, and secondly to the visibility of the use of the practice itself so that its use may be observed by others. Rogers (1983) argues that the more visible the effect then the more likely the adoption. Technology using

hardware is immediately more visible than process or software developments. However, hardware in itself may not challenge personal or professional judgement, which can be involved in many of the process aspects of nursing practices.

Rogers (1983) goes on to distinguish between different forms of innovations that may have a hardware component and involve equipment or that may be more concerned with what he terms software. Software innovations are described as mainly concerned with systems and processes, for example a new philosophy or new management styles. Rogers argues there is a difficulty in observing the use of these innovations which seem to relate closely to indirect use or cognitive application of research as outlined on page 14. Observability might be a less important attribute of indirectly applied research.

## 2. Communication Channels

Rogers (1983) describes the communication channel as the means by which new knowledge travels from one person to another. He argues that becoming aware of some new knowledge is the first stage in using that knowledge in practice. Mass media is a rapid and effective means of creating awareness but Rogers believes that interpersonal channels involving face-to-face communication are more effective in persuading others about an innovation. The effect of peers who are similar in terms of social status, beliefs, education and interests (homophilus) is thought to be greater than communication from someone perceived as different to oneself (heterophilus) such as a change agent or researcher. However, Rogers then goes on to argue that most people learn about and are persuaded about an innovation from those who have already adopted an innovation, yet he also believes these early adopters to be somewhat different to later adopters and therefore heterophilus. Rogers also proposes that an innovation is widely taken up once around 10 to 25% of a user population adopt the innovation. Perhaps beyond this level of adoption not only is visibility of the innovation high but communication about the innovation is more likely to be from a homophilus peer than a more heterophilus change agent or early adopter.

### 3. Time

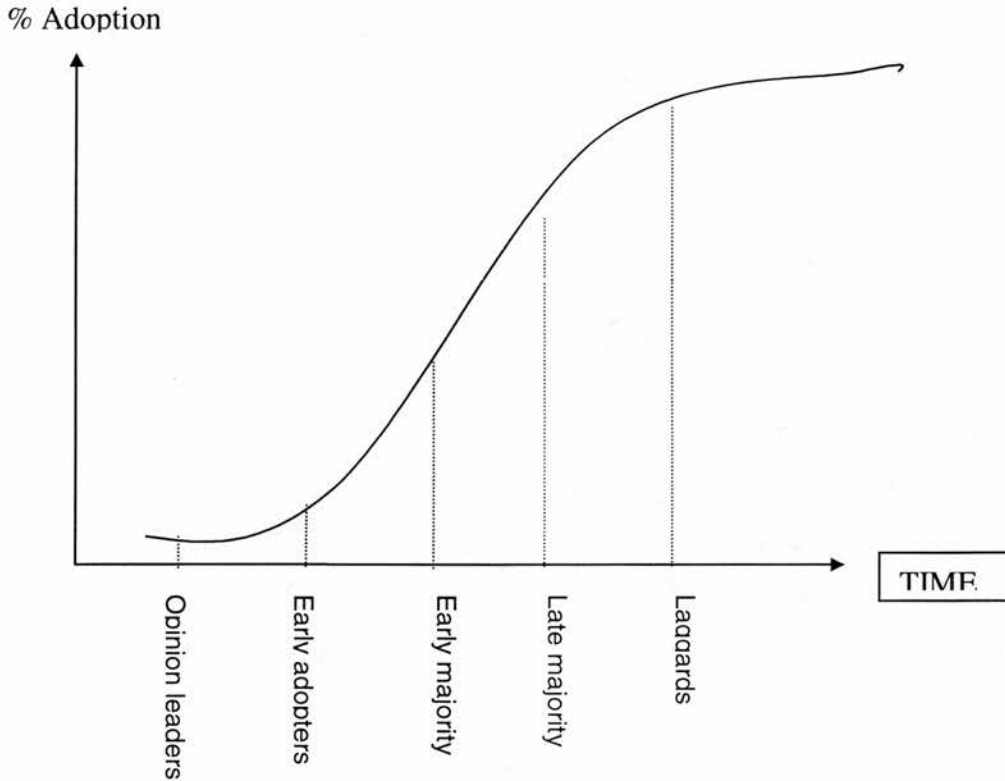
Innovation adoption varies over time according to Rogers (1983). He argues that some people are more likely to adopt an innovation earlier than others. The early adopters are described as opinion leaders; their ideas are respected because they are not too far ahead. He argues that they tend to have more education, higher social status, favourable attitudes to change, the ability to cope with uncertainty and risk and a highly interconnected social system and networks; they also tend to be less dogmatic and to be active information seekers. He contrasts these early adopters with innovators who are the first to adopt an innovation. These people may be seen as risk takers and do not necessarily command respect. The majority of those who then go on to adopt an innovation are divided into the early majority and the late majority. The late majority are sceptics driven to adoption mostly by peer pressure. Those who are most resistant to adopting an innovation are termed laggards. Rogers characterises the late majority as having low social status, making little use of mass media and obtaining most of their information from their peers and interpersonal networks.

The adoption of innovations follows a typically S-shaped curve although the incline of the graph may vary dependent on the innovation as shown in figure 2.1.

Learning about an innovation or some new knowledge is seen as the first stage in what Rogers describes as a five-step innovation-decision process. Following this first stage of awareness is that of persuasion where either a positive or a negative attitude toward the practice is formed. In the third, decision stage, information about a practice is sought out and evaluated. This stage necessarily requires some skill in seeking out and interpreting information and may explain why Rogers believes that many rely on the evaluations of peers at this stage.

“The results of various diffusion investigations show that most individuals do not evaluate an innovation on the basis of scientific studies or its consequences.....most people depend mainly upon a subjective evaluation of

an innovation that is conveyed to them from other individuals like themselves who have previously adopted the innovation” (Rogers 1983, page 18).



**Figure 2.1 S-shaped curve of the rate of innovation adoption.**

If the decision is taken to adopt an innovation, Rogers describes the following stages as implementation (where the innovation is trialed) and confirmation (where the innovation becomes an accepted part of practice). Whilst Meyer and Goes (1988) believe the stages of innovation adoption to be linear and progressive, Rogers (1983) does recognise that although movement through the stages is almost always progressive, that regression is also possible. Adoption prior to persuasion is considered possible when the decision to adopt an innovation is made centrally within an organisation and the user has no say in whether to adopt the practice or not. Harrison (1996) believes that such a process of top-down change requires that information about the practice must be not only disseminated to all the relevant staff,



but that resources and incentives to use the practice must also be provided and the process be co-ordinated centrally. He further believes that despite managerial direction as to what is expected, covert messages are more forceful and countermanding in organisations.

As in the research by Meyer and Goes (1988), a scoring system based on the five stages described by Rogers (1983) was developed by Brett (1986). She assessed the level of adoption of 14 research-based nursing practices awarding one point if the nurse was aware of a practice, a further point if the nurse believed in the practice, another point if the practice was used some of the time (partial implementation) or two points if the practice was used all of the time. The wording of the Brett tool asks whether a nurse believes that a practice should be used or not. A positive response is interpreted as a nurse being at the stage of persuasion. However, the term persuasion implies that the evidence has been actively considered and accepted whereas belief may reflect what someone thinks or their views however arrived at.

The scoring system represents a point prevalence analysis and cannot take into account movement between the levels of adoption. However, adoption without persuasion could be identified, although this was found to be limited with the nurses in her study.

The rate of adoption is described by the percent uptake of the innovation and may vary for the same innovation in a different social system. An acknowledgement of the influence of the setting would seem crucial in the utilisation of research based practice although it is unclear whether all forms of Rogers' software innovations or indirectly applicable research might also follow such a distinct pattern of adoption.

#### 4. The Social System

Rogers (1983) describes a social system as "a set of interrelated units that are engaged in joint problem solving to accomplish a common goal" (page 24).



Within this definition, units may be individuals or groups. This is clearly helpful in attempting to analyse the practice of nurses working together in wards and also as part of the larger hospital unit. Social systems have structures such as communication channels, networks, system norms and opinion leaders. These structures then are simply patterns of behaviour in subunits which can give rise to regularity and predictability and so enable study at an organisational level.

Innovation decisions may be taken solely by the individual but there is also recognition within this model that decisions may also be made collectively or centrally. Other individual decisions may be dependent on a central decision; for example, a nurse cannot choose to use a 100% silicone catheter if the hospital supplies committee chooses not to stock them. Some studies of nursing research utilisation have chosen to restrict their studies to practices that are purely individual decisions, but this seems to neglect the true complexity of many decisions concerning nursing practice. Rogers (1983) argues that variations in rates of adoption cannot be explained solely through individual behaviour but must take into account the social system of which that individual is a part. How the effects of the system and the individuals who make it up can be dissected is not elucidated and perhaps not possible or necessarily helpful. It has been stated previously that a focus on individual responsibility for research utilisation is unhelpful (McGuire 1990). Haines and Jones (1994) agree, arguing that the use of research in practice is less of an individual effort and more an organisational issue. The use of Rogers' model of diffusion of innovation enables study of both the individual and the social system of which that individual is a part. There is also recognition of the structure of subunits enabling study at both hospital and ward level.

## **CONCLUSION**

For the purposes of this study, the dissemination of research is defined as the communication of research findings and includes both spontaneous or unplanned diffusion and that which is planned or managed.

The utilisation of research includes the direct implementation of research findings into practice, the indirect use of research in creating new understanding or being illuminating and the incorporation of methods or tools of research into practice.

A social interaction and diffusion model is proposed as being most suitable to frame a study of nursing research utilisation. Such models take account of organisational context, the attributes of innovations or research findings and interactions between the individual, the context and the innovation itself. The model as described by Meyer and Goes (1988) is rejected due to assumptions about linear progression of research utilisation, and the neglect of indirect and methodological utilisation of research. No account is taken of research utilisation which may be unplanned or spontaneous or that which is driven more locally within the hospital ward.

Rogers (1983) model of diffusion of innovations is argued to provide a useful framework for the purposes of this study. The model allows for the non-linear progression and acknowledges the indirect utilisation of research. Unplanned dissemination is clearly accounted for with a focus on interpersonal channels of communication. A five-step innovation decision process is described which has been subject to scale development in studies of both medical and nursing research utilisation. Importantly, this model enables the study of the social system within which individuals interact and the effect on utilisation.

## CHAPTER 3

### THE DISSEMINATION OF RESEARCH

In order that research utilisation might take place, there must first be sufficient research on which to base practice, and this knowledge must then subsequently be communicated to those practising nursing. This chapter discusses the process of dissemination of research. Firstly the current state of nursing research is examined followed by a critique of the reporting of nursing research. In some areas the volume of research is overwhelming and strategies to deal with this and problems of research literacy are explored. This is followed by a discussion of guidelines and clinical protocols as other approaches to disseminating research-based practice. Finally a variety of dissemination techniques are reviewed with a specific focus on nursing.

#### **NURSING RESEARCH: IS DISSEMINATION A REALISTIC GOAL?**

In Chapter 1 it was argued that there is now a sufficient research base for practice in some areas of nursing. However, in many other areas of nursing, research continues to be lacking. Funk et al (1989), Wilson-Barnett et al (1990), and Closs and Cheater (1994) believe that on many topics there is still an insufficient body of research to warrant implementation.

“It must be noted that to date there has been inadequate research of high quality, appropriate for application and readily accessible to clinical nurses” (Wilson-Barnett et al 1990 page 621).

Such a situation is not unique to nursing. Baker (1996b) believes that within health care practice in general, in some cases there is no research available to support practice yet in others there is research that is not being used.

There is some concern that nursing research is under-resourced both in terms of funding for projects and in lack of sufficient postdoctoral expertise. Large-scale, fully funded, multicentre, postdoctoral research appears to be the exception rather than the rule in nursing. There has been a proliferation of small-scale one-off studies (Tierney 1994, Hunt 1994, McIntosh 1995) which although of value, should not be considered as a basis for practice changes without at least some attempt at replication. In the Strategy for Nursing Research (Department of Health 1993) it was recognised that there were a large number of small unreplicated studies in nursing. MacGuire (1990) argues that much nursing research has been unsystematic and often small-scale in order to fulfil academic requirements. It seems, then, there is a lack of long-term and multicentre programmes, and teams of researchers (MacGuire 1990, Hunt 1994) working to produce replicated and substantiated research (Funk et al 1989, Lindquist et al 1990). This limits the faith that can be placed in findings and the generalisability of research.

In 1985, Haller and Reynolds argued that replication studies were essential in nursing in order to build up a reliable body of knowledge. In the Conduct and Utilisation of Research in Nursing project (CURN), Horsley and Crane (1983) recommended a minimum of two supporting studies of sound scientific merit in an area before practice changes were considered. Yet different research projects may produce contradictory findings (Pulsford 1992, Lindquist et al 1990, MacGuire 1990). There may be lots of conflicting research findings in some areas, for instance pressure sore prevention and treatment (Gould 1986). Whilst contradictory findings may be a function of methodology or population and entirely comprehensible to the researcher, this does not assist the practitioner in finding a solution to a clinical problem.

Not only is it argued that much nursing research is inadequate but also that it is often poorly presented for practitioners so that the implications for practice fail to be reported or made clear in research reports (Lindquist et al 1990, Funk et al 1989, Tierney 1994, Mulhall 1996).

“Many studies have explored issues but few have provided direct recommendations for care” (Wilson-Barnett et al 1990 page 621).

This criticism does seem to have been taken on board by several journals and researchers with a number of journals including a request for recommendations for practice in their guidance for articles for publication.

## **THE COMPLEXITY OF NURSING RESEARCH REPORTS**

Wilson Barnett et al (1990) argue that there is great complexity involved in evaluating clinical studies. Many lack control due to the inherent difficulties of the clinical setting whilst others require lengthy and meticulous data collection. Such complexity may require detailed and lengthy reports but these may then be seen as too technical and inaccessible to many practitioners (Funk et al 1989). Many journal articles use language that makes them difficult to understand, contain a high degree of complexity or may be of poor quality (Peters 1992, Rodgers 1994). Funk et al (1991a) conducted a survey of 924 clinical nurses in the USA and found that jargonistic language was a barrier for nurses in reading and evaluating research reports. Indeed, Closs and Cheater (1994) believe that the use of jargon is highly valued in some areas of nursing research. The use of jargon and technical detail can make research reports so incomprehensible to many clinicians (Mulhall 1996) that research may be seen as theoretical and not relevant to practice (Wright and Dolan 1991).

Nursing research also tends to be reported in specialised or academic journals, which are infrequently read by practitioners (Jennings and Rogers 1988, Mulhall 1996). Sparkman et al (1991) argue that practitioners base care on what has been learnt in pre-registration education or from textbooks and practical literature and not from reading of research journals. Hence,

“..the findings of nursing research reach a limited audience and fail to affect the huge mass of nurses engaged at the hard edge of practice” (Wright and Dolan 1991 page 38).

MacGuire (1990) believes that clinical nurses do not read research in part because there is a lack of easily accessed summaries on specific topics. Closs and Cheater (1994) argue that researchers need to write for two separate audiences. One research report may be for academic scrutiny and may or may not be appropriate for clinical staff. They suggest that research be presented more in the form of short reports in the professional journals for clinical staff.

Tierney and Taylor (1991) stress the need for research reports to be not only readable by practising nurses but also meaningful. They suggest a dichotomy exists in the value attributed to research reports by researchers and practitioners, with practitioners valuing relevance, realism and immediately applicable information, and researchers valuing accurate, precise data gathering with a theoretical perspective and clear research problems. Mulhall (1996) supports this view believing that researchers and practitioners have somewhat different questions and aims. She argues that clinical staff desire pragmatic directive answers to clinical problems whereas researchers want to develop theory and knowledge and do not have a problem with discursive and ambiguous findings. Yet researchers are seeking to explain practice with theory, which can then either be directly applicable and help solve a problem or may be indirectly applied in raising awareness and leading to an insight in practice. Researchers may seem more tolerant of ambiguity but this may be a product of higher education rather than a different perspective on practice. Indeed it could be argued that clinical nurses are equally if not more skilled at dealing with ambiguities which they constantly face in everyday practice with individual patients.

Many nurses, then, remain sceptical not only of the reporting of nursing research but also of its intrinsic value. Pulsford (1992) argues that research tends to address specific aspects of physical care and as such is difficult to apply to a whole person. She believes that equally good, or better, recommendations for practice come from philosophy of care and common sense as much as 'supposedly objective research



evidence'. Pulsford, however, fails to take account of reflexivity in deriving standards for practice from philosophy or common sense.

It would appear then that research findings themselves may be complex and unclear, that they may be reported in too complex a manner and that they may be reported in the wrong place for the purposes of clinical nurses.

## **THE RESEARCHER-PRACTITIONER DIVIDE**

It seems that not only nurses, but health service staff in general, see research as something that others do whereas they are predominantly concerned with delivery of care (Peters 1992). Many authors attribute this to the physical separation of researchers and practitioners, which has also contributed to an insensitivity of researchers to the clinical problems faced by practitioners (Jennings and Rogers 1988, Chief Scientist Reports 1992). Researchers and practitioners tend to have different workplaces and separate journals, meetings and conferences, and may even use different language (Last 1989). Researchers might therefore choose areas of study, which are not of immediate concern to those in practice. This was a common criticism in the 1980s as much research had an education or managerial focus. There was often poor communication between researchers and practitioners in terms of formulating and identifying research questions (Bostrom et al 1989). However, practitioners may not recognise or be able to define a problem so they may explain and reconceptualise problems in terms of lack of staff or lack of time (MacMillan 1989). They may not recognise that a problem exists due to a lack of feedback on their practice and a lack of critical analysis of their own work. Practitioners may believe there is a lack of relevant research but in one study practitioners were surprised at the extent of research available in clinical topics once a search of the literature was made (Tierney and Taylor 1991).



A lack of interaction between researchers and practitioners was highlighted within the Strategy for Nursing Research in Scotland.

“Some means of increasing and improving the interface between those with knowledge of research methods and practising nurses must be found if the potential contribution of nursing research is to be fully developed....” (SOHHD 1991 para 2.7).

Yet the ‘means’ to achieving this goal continues to be elusive. Whilst close contact with practice issues would seem to be essential, the physical placement of researchers within a specific practice environment could only sensitise them to localised problems and issues, and denies other means of achieving relevance in research questions. Closs and Cheater (1994) support the view that researchers and practitioners are from separate cultures which leads to a gap in the identification of problems and areas for research. However, researchers may be quite in touch with current policy issues that clearly drive some changes in practice (Graham 1996). Researchers can also seek out relevant practitioners to discuss and develop ideas. It could be argued that the relevance of research to current health needs and policy has improved through the move to needs-led commissioned research rather than curiosity-driven research which is proposed by the researcher. Whilst such a move may enable the NHS agenda for research to be met more reliably, it seems that scope for individual and often basic exploratory research is required in order to develop research ideas and underlying concepts, and to pursue research in areas of interest to minority client groups (Couchman 1994). The innovative ideas and research from individuals has to be recognised and can be controlled to a great extent by the willingness of agencies to fund research or not (Deykin and Haines 1996). Most would now agree that a mixture of both types of research is needed.

### **TOO MANY PAPERS, TOO LITTLE TIME**

The volume and the poor quality of some research reported in the journals have been cited as major obstacles to clinical staff who attempt to evaluate research for practice

(French 1996, Meah et al 1996, Deykin and Haines 1996). Both skills and time are required to conduct a search and locate the literature. In many clinical topics there can be a large amount of research of varied quality which may be widely dispersed in the literature (Luker 1994); accessing the original research may not only be difficult but in some cases unlikely. French (1996) cites the care of patients with indwelling urinary catheters as an example of this. It is undeniable that there has been a real increase in the volume of nursing literature in recent years "...which threatens to swamp competent researchers in specialised fields let alone practitioners who may hold more general interests" (Mulhall 1996 page 191).

With so many papers and journals in some areas, nurses in both practice and academia can find it difficult to keep up to date with research (Funk et al 1989, MacGuire 1990, Swanson et al 1992, Closs and Cheater 1994). Indeed, Cullum (1996) argues that responsibility for keeping up to date in a subject area cannot be placed upon an individual without the provision of adequate education resources and support. Even if the volume of research available were to be managed with new information technology such as the internet, Baker (1996a) argues that it would not be possible to consult such a database for each patient contact and that there would still be so much information as to overwhelm the individual practitioner. Baker goes on to state that in practice research evidence may be required immediately for practice decisions but it can take considerable time to find and put together the evidence if it exists. This may be the case when a practitioner is faced with a new problem or a problem that they encounter only occasionally. However, many clinical problems are met frequently within more narrowly defined areas of practice (for example, intensive care nursing and the frequency of ventilator circuit changes) and some time can be taken to re-evaluate practice. Yet even within defined areas of practice in nursing the task may seem daunting.

Hunt (1987) conducted an action-research project focusing on the translation of research findings into practice. Participants in the study found that there was an overwhelming amount of information in some areas. Such a wide range of topics and

journals within nursing was felt to be a barrier to nurses attempting to move toward research-based practice. MacGuire (1990) supports the view that there is information overload in some areas, which may in itself impede attempts at research-based practice.

“They (nurses) do not know what to recommend and may, sensibly, sit tight and do nothing” (MacGuire 1990 page 619).

### **Systematic Reviews**

Systematic reviews have been proposed as a means of dealing with information overload, the inaccessibility of some research and the lack of skills to assess research. A systematic review of quality requires the use of a clear methodology, sampling and inclusion/exclusion criteria, and an evaluation of the methods of research. Until recently unsystematic reviews have been the norm in part due to the high level of resources and skills required to conduct them. Unsystematic reviews have limited value in that they review only a subset of the literature which can be easily accessed (Luker 1994). Research that is published tends to be biased towards positive outcomes and tends to reflect popular consensus (French 1996).

“The use of unsystematic reviewing procedures results in the possibility that practice becomes based on popular consensus rather than rigorous reliable research evidence” (French 1996 page 114).

French (1996) firmly believes that more systematic reviews are required in nursing so that we can begin to know what best practice is. Mulhall (1996) supports the further development of systematic reviews and also of meta-analysis but argues that we are still lacking the studies with which to do this and the nurses with the skills to conduct the reviews.

Whereas a systematic review critically reviews all the research in one particular subject area, meta-analysis combines all the results from a number of studies. MacGuire (1990) believes that meta-analysis is important and useful to facilitate research-based practice. However the statistical procedures and methods may be

difficult for many nurses to understand and appraise let alone see the application for practice unless this is made clear by the researcher.

### **Information Management Strategies**

The issue of information overload was widely recognised within the Strategies for R&D in both England (Department of Health 1991), and Scotland (SOHHD 1993). An information strategy was produced as part of the NHS R&D programme (Department of Health 1991) which included the setting up of the NHS Centre for Reviews and Dissemination (CRD), the Cochrane Collaboration and a National Projects Register. However, Deykin and Haines (1996) question whether the Government should take further responsibility for the dissemination and implementation of research, so that as well as funding the initial study, a programme of dissemination should also be funded within the research grant (Russell and Hunter 1990).

The NHS Centre for Reviews and Dissemination (CRD) aims to promote research-based practice in the NHS by providing systematic reviews on selected topics. These reviews are maintained on databases and an information service is provided. The Database of Abstracts of Reviews of Effectiveness (DARE) is a bibliography of published research that has been subject to systematic review and is published by CRD. Bulletins such as the Effective Health Care Bulletin, newsletters and patient information leaflets are also produced to disseminate the findings of the reviews. Topics for review tend to follow medical diagnosis although there is nursing input to the Centre and reviews of direct relevance to nursing have been produced, for example 'The prevention of pressure sores' (NHS Centre for Reviews and Dissemination 1995).

Within CRD, the Practice and Service Development Initiative (PSDI) focuses on disseminating relevant research to nurses, midwives and health visitors and other PAMs. They hold regional databases of developments in nursing to provide networking and share good practice but these are not necessarily research-based innovations. (Up to May 1998, only four regions in England have been profiled, with

three more on stream.) The database for each region is then held in local NHS libraries and is thus available to nurses in that region. It seems unfortunate that the information is not published more widely and is not available nationally.

The Cochrane Collaboration has similar aims but also has strong international links and focuses on the review of randomised controlled trials. The Cochrane Database of systematic reviews is available online or on CD Rom. Separate databases exist on Pregnancy and Childbirth and on Effective Professional Practice. However the vast majority of topics reviewed are based on clinical treatments for different pathologies, which is perhaps not surprising given that it exclusively deals with randomised controlled trials (RCTs) and is medically driven. Some reviews in the Cochrane Collaboration on Effective Professional Practice (CCEPP) do have a much broader remit and also specifically address nursing practice. The aim of both the CRD and the Cochrane centres is to produce information for evidence-based health care but there is a concern that a practitioner must be able to retain clinical freedom to pursue care for the individual as they see best and also to follow what the individual patient wants. It may be difficult for individual practitioners to go counter to government sponsored research and any guidelines produced from it. (This issue will be further explored in a subsequent section addressing the use of clinical guidelines.)

A national research register is now being developed at the Department of Health and should prove a useful resource to search out ongoing or unpublished research although this was not accessible from Scotland at the time the study in this thesis was being conducted. In Scotland, an information manager maintains a national database of projects in Scotland. Whether this will capture all the 'grey' non-funded work and development work in nursing which is catered for by PSDI in some Regions of England is not clear.

French (1996) believes that nurses, in general, are not using these new databases, which are not widely available to all clinical staff in the Trusts. Meah et al (1996) explored the attitudes of 32 midwives to research and their perceived barriers to

research utilisation. They found that all the midwives knew about the Cochrane database but had difficulty gaining access to it. As Colleges of Nursing moved into Higher Education, library access for nurses employed in Trusts has become quite difficult (Meah et al 1996). The Cochrane databases in midwifery are long-established and well known to midwives so, whilst it cannot be assumed that nurses will be as knowledgeable of the new databases from the results of this study, it might be fair to assume that they too will have problems accessing library facilities and a full range of nursing journals. Difficulty accessing libraries because of restricted access or geography may mean that other strategies to disseminate information to clinical nurses are needed. Lindquist et al (1990) suggest that condensed summaries of research reports should be made available at ward level whereas Swanson et al (1992) argue that even the contents list of journals of interest could be circulated to ward staff. However, in a survey of 600 (response rate 66% or n=398) British nurses working in hospitals, the community or education, Pearcey (1995) found that 69% agreed that current research was distributed to their place of work but 59% of these felt it was inadequate in some way. They said it was not distributed sufficiently widely and there was a lack of time to read and discuss papers.

Other strategies have been employed within Scotland to help health care practitioners cope with the volume of research available. Local multidisciplinary health services research networks were set up to provide guidance, information and contact names for nurses seeking advice about research matters in general. They also ran in-house courses on research skills and critical appraisal skills. (Unfortunately, these Networks were deemed to have fulfilled a timely function and to be no longer appropriate after 1998 when funding from the Scottish Office was withdrawn.)

Following the closure of the Nursing Research Unit in Edinburgh, the Nursing Research Initiative for Scotland (NRIS) was established in 1994. The remit of the NRIS was to provide a resource to nurses in Scotland (and latterly to other non-medical clinical NHS staff) for research, and to carry out programmes of research. A



specific aim was to disseminate NRIS and other research findings through a variety of means, in order to promote the uptake of evidence-based practice.

Throughout the UK, the Foundation of Nursing Studies aimed to help nurses move toward research-based practice by supporting dissemination and implementation projects, and through conferences and networking. The Royal College of Nursing (RCN) Institute Dynamic Quality Improvement Programme (DQI) aimed to support the development of quality through networking support and education on quality issues plus influence policy development. Part of this work involved developing national guidelines for practice and systematic reviews. A specific network for psychiatric nurses (Network for Psychiatric Nursing Research) was funded by the Department of Health and again facilitated networking and organised conferences. It also held a database of projects.

Some attempts at dissemination have taken place at a local level. Following an audit of research activity in nursing and PAMs in Yorkshire Region, a strategy was put in place to address research and development. This involved local networks in trusts and networks for those in practice development (Yorkshire Regional Health Authority 1991). Funding opportunities for research were also widely publicised to nurses (Malby 1996). The value in such an organisational approach might be the local commitment and ownership of the initiative.

## **THE LACK OF CRITICAL READING AND RESEARCH SKILLS**

In Rogers (1983) model of diffusion of innovations, the first step is becoming aware of an innovation and then making an appraisal of it. In terms of utilisation of research, this involves becoming aware of research, which is generally reported in journals and therefore requires skills in searching, reading and appraising research literature. In a report of a government task force on R&D it was clearly stated that research literacy is needed before a move to research-based practice could be made (Department of Health 1992).



The ability of nurses to undertake this first step and critically evaluate reported research has been questioned (Funk et al 1989, Jennings and Rogers 1988). In two UK studies of nursing research utilisation, both Hunt (1987) and Armitage (1990) found that nurses were hampered by their lack of critical reading skills and the process of searching out and reviewing reports became highly time consuming. Meah et al (1996) found that midwives felt a lack of sufficient skills in reading and appraising research as a first step toward utilisation.

In Pearcey's (1995) survey, nurses were asked what their perceived needs were for research skills training with a view to setting up courses to improve research awareness and utilisation. She found that 97% (n=386/398) were not satisfied with their research skills. The nurses felt they lacked the ability to appraise research reports. This applied not only to reading the reports but also to finding them, reading them and applying the findings to practice. They had no confidence that they could read critically.

A high level of skill is required to evaluate research literature in any area. Nurses must look at more than one study and have a range and depth of statistical skills, qualitative method, the ability to consult a theoretical background and the ability to synthesise knowledge from disparate fields (McIntosh 1994). Deykin and Haines (1996) support this view and, further, believe that an understanding of statistical power and clinical significance are essential in reviewing research reports with quantitative method.

French (1996) argues that nurses have a positive attitude to research but lack the ability and confidence to evaluate and use research. Pearcey (1995) supports this view: 78% of nurses she surveyed agreed that research findings could help improve their work. She also found that nurses who had attended research courses had a more positive attitude to research and felt they were more able to use research to improve care. This confirms the findings of Brett (1986) in a study of nurses in North

America. However, as no measures of attitudes and perceived ability to use findings was taken prior to the courses it is impossible to know whether the nurses began the courses with pre-existing positive attitudes or whether the research course had a genuine effect on their attitudes. If it assumed that many nurses would self-nominate to attend a research course, then they must surely already value research and have a strong interest in the area. Attitude should not be confused with ability. Harrison et al (1991) found that whilst nurses undertaking a degree programme had significantly more positive attitudes toward research at the end of the course, they did not have significantly different knowledge about research.

If one accepts then that the ability to critically appraise research papers seems to be a pre-requisite to implementation, the provision of research courses and courses to enable nurses to critically appraise the literature would seem to be essential. Yet Closs and Cheater (1994) do not support the separate teaching of a methods course in research but the teaching of topics throughout the curriculum from a research base. Such a form of teaching from a research base may be possible within a wider curriculum but discrete skills of accessing, reading, critiquing and assessing readiness for implementation of research might need to be taught as core skills for critical appraisal.

One project that has attempted to address this issue with health service staff is the Critical Appraisal Skills Programme (CASP). This is part of the Getting Research into Practice Project (GRiPP) which began in Oxfordshire in 1993 and looked at how selected topics could become more research-based in practice through purchasing initiatives (Dunning et al 1994). CASP uses multidisciplinary workshops where clinical problems are discussed and research literature reviewed in order to appraise the evidence around potential solutions to a problem (Milne et al 1995). The workshops assume little biomedical knowledge and also introduce participants to appraisal and use of systematic reviews. Milne et al (1995), in a preliminary evaluation of the workshops, found that participants felt their knowledge and skills in certain 'key areas' had improved. However, the 'key areas' are not defined by the

authors. They also report a Canadian systematic review of randomised controlled trials of teaching critical appraisal skills and found that their effectiveness remains uncertain (Audet et al 1993).

In Scotland, a number of initiatives to promote the synthesis, transfer and use of research in practice were brought together under the auspices of GRASP (Getting Research Applied to Scottish Practice) (Moir et al 1995). Central to this strategy seemed to be the appointment of an information manager at the Chief Scientist Office (CSO) and a training programme for critical appraisal skills using the CASP approach through the NRIS, health boards and the former Local Health Service Research Networks.

The initiatives described above relate to post-registration moves to improve critical appraisal skills in nurses. There have also been recent moves to improve the level of pre-registration education of nurses with the introduction of the 1992 Diploma programmes. But for the majority of nurses who trained prior to the introduction of these programmes there may be a shortfall in their education with regard to critical appraisal skills. Pearcey (1995) found that 33% of the nurses she surveyed had research in their basic training but 30% of these said it was inadequate. Few pre-registration Diploma nurses were in practice at the time of her survey. Further evaluation of the ability of the Diploma level nurses to critically appraise and use research is needed.

## **THE USE OF CLINICAL GUIDELINES**

A further strategy to communicate the findings of research and overcome difficulties in reviewing the literature has been the development of research-based clinical guidelines. (Implementation might be seen as a further and separate stage.) Clinical guidelines can, in turn, inform the development of standards and quality assurance programmes and, indeed, need to be audited to assess their implementation and their effect on patient outcome where possible. Whilst Duff et al (1996) believe that a

defining feature of clinical guidelines is that they are based on research findings, they may also be based on expert opinion. Which form of evidence is used should be explicitly stated as a guideline based mostly on expert opinion should be used more cautiously than one based mainly on research. Moreover, the NHS Executive (1996a) now recommends that clinical guidelines should be based upon a systematic and critical review of the literature.

Clinical guidelines have been developed nationally against a remit of reducing unacceptable variations in practice in areas of high morbidity and mortality and where intervention can make an appreciable difference to health outcomes. The NHS Executive (1996b) oversees the development of clinical guidelines in England through the clinical outcomes group. The RCN (1996) was involved in the development of multidisciplinary clinical guidelines and took responsibility for the dissemination of some nationally developed guidelines to nurses in the UK. They also have databases available and provide an education service to nurses to enable them to use clinical guidelines and audit.

The production of clinical guidelines in Scotland is co-ordinated by the Scottish Intercollegiate Guidelines Network (SIGN). SIGN was established in 1993 with the aim of producing national guidelines that could be adapted and developed at a local level to produce local protocols. Haines and Jones (1994) argue for locally owned and developed guidelines, and Grimshaw and Russell (1993a) believe that implementation is more likely if practitioners have been involved in their development. Yet the NHS CRD (1994) found no conclusive evidence to support the view that involvement with guideline development and ownership leads to greater compliance with guidelines. They argue that guidelines produced by national experts or locally respected clinicians might be seen as more credible and therefore more likely to be implemented. The NHS CRD (1994) further argues that involvement of the end users of the guideline is only required at the stage of implementation. Perhaps some confusion arises with the hierarchy of guidelines from National to local, and that implementation of national guidelines (as proposed by SIGN) involves the

subsequent development of local guidelines or protocols. There are, however, problems at this stage of interpretation in that clinical guidelines can serve the status quo if not based on research (Baker 1996a). Even when research-based clinical guidelines are developed, one study found that local interpretation simply reflected existing local practices (Liles et al 1995). The researchers concluded that regional guidelines for ENT surgeons did not have the ability to change clinical practice.

Most of the SIGN guidelines follow medical diagnoses, and working groups to develop the guidelines have been dominated by medical staff and hospital-based care. The relevance of some of the guideline topics for nursing is high such as ‘the Immediate Discharge Document’ and ‘Leg Ulcers’ yet nursing has had a token input and often at the later stages in the guidelines’ development. Grimshaw and Russell (1994) and Duff et al (1996) argue that guidelines are best developed with representation of all those who will be using the guidelines in practice.

In both Scotland and England the type or levels of evidence used in clinical guidelines is assessed according to the United States Agency for Health Care Policy and Research (AHCPR) (1992) guidelines (see table 3.1).

<b>LEVEL</b>	<b>TYPE OF EVIDENCE (Based on AHCPR 1992)</b>
Ia	Evidence obtained from meta-analysis of randomised controlled trials
Ib	Evidence obtained from at least one randomised controlled trial
IIa	Evidence obtained from at least one well designed controlled study without randomisation
IIb	Evidence obtained from at least one other type of well designed quasi-experimental study
III	Evidence obtained from well designed non-experimental descriptive studies, such as comparative studies, correlation studies and case control studies
IV	Evidence obtained from expert committee reports or opinions and/or clinical experience of respected authorities

**Table 3.1 Levels of Evidence (from SIGN 1995)**

This reflects the view in medical research that RCTs are seen as the gold standard of evidence (Woolf et al 1990) and that non-experimental studies are attributed a much lower value, whilst qualitative research appears to have no place. A review of several randomised controlled trials is proposed as a higher level of evidence. Not only does this present corroborated evidence but Freemantle and Watt (1994) argue that even when a single, large randomised controlled trial appears to answer a clinical problem interpretation of the results is beyond the ability of most health care professionals.

Perhaps the value attributed to RCTs and quantitative research is not so surprising considering that Peckham (1991) argued for the evaluation of new approaches against existing practice using extended trials to take into account economic feasibility and also commercial viability. Whilst the use of qualitative method is acknowledged as appropriate in some subjects, he comes out firmly in favour of the RCT and demonstrates a bias toward medicine in the dominance of health services research.

“A randomised trial remains the best way of assessing whether a medical hunch is correct or incorrect” (Peckham 1991 page 370).

Whilst RCTs are well suited to assessing the effectiveness of health care interventions, they may not always be the most appropriate method to study issues in health care. Nursing in particular embraces a more eclectic approach and other forms of research are viewed as being relevant and rigorous. RCTs are useful in attributing causation and having high internal validity but do have ethical problems of withholding treatment to the control group and a lack of generalisability because of strict entry criteria. Long (1996) argues that surveys are particularly useful for health services research as the findings can be generalised back to the source population when a random cross-sectional sample has been taken.

At the time of writing, the National Board for Nursing Midwifery and Health Visiting in Scotland (NBS) was working with the Royal College of General Practitioners and the Scottish Centre for Post Qualification Pharmaceutical Education on the implementation of the SIGN guidelines. SIGN (1995) states that it had widened its



remit to include monitoring and evaluation of the use of the SIGN guidelines although this was yet to be reported. A review of 91 studies of the introduction of clinical guidelines has been conducted by the NHS Centre for Reviews and Dissemination (CRD) (1994). It found that the vast majority of studies demonstrated that practitioners made significant moves towards giving care in line with the guidelines. Of the 17 studies that evaluated patient outcomes, 12 showed significant improvements. However, most of the studies reviewed were not UK-based (77/91) and all were concerned with medical interventions. The sizes of the improvements in practice and outcomes were not clear and in an earlier review of clinical guideline implementation studies, were found to be quite varied (Grimshaw and Russell 1993b).

So not only are clinical guidelines fraught with practical difficulties they are also contentious in principle. Harrison (1996) questions whether it will ever be possible to have guidelines for everything and every context, given the wide range of settings and local circumstances, and the speed with which technology changes. The tendency is then for consensus statements that are so full of compromise as to be meaningless. Other criticisms of guidelines may be that they have a limited 'shelf life' and need to be up-dated periodically, that they can take an enormous amount of skill and time to produce and that they should be seen as aids, not substitutes, for clinical judgement. Whilst negligence is currently judged on the accepted practice of health care professionals (the Bolam test) rather than on current guidelines or research, it would seem that this issue requires further clarification.

It could be argued, then, that clinical guidelines are a useful and effective manner of disseminating some forms of research evidence to practitioners and explaining how the research can be utilised in practice. However, Harrison (1996) states that effective implementation strategies are essential as the dissemination of guidelines alone are usually not effective in changing behaviour (Grimshaw et al 1995, Lomas et al 1989).



## EVALUATING METHODS OF DISSEMINATION

“..merely publishing research in grey literature reports , and in the pages of even the most prestigious clinical journals, does little to change practice among the professionals whose decisions determine the process of care for NHS patients or potential patients” (Freemantle and Watt 1994 page 133).

It is perhaps a little disappointing but not surprising that printed material such as journal publications and mailing-out information has been in the main ineffective at changing practice when used alone (Freemantle and Watt 1994, Oxman et al 1995, Harrison 1996).

Many other methods of distributing information about research findings have been proposed such as audit and feedback, conferences, education and educational material, use and development of practice guidelines, marketing, opinion leaders, academic detailing and reminder systems (Department of Health 1995).

Academic detailing refers to the one-to-one or face-to-face meeting between practitioner and person disseminating information about a new practice. This other person is usually a colleague, opinion leader or academic. However Freemantle and Watt (1994) broaden this definition to include representatives promoting products as part of a media marketing strategy. They cite the uptake in prescribing of a new anti-depressant by GPs as an example of the power of this face-to-face strategy that they feel holds much promise for dissemination within the NHS. Indeed a study by Luker and Kenrick (1995) found that community nurses used drug companies' information as a regular source of updating their knowledge, in part because the presentation was thought to be good. The NHS CRD (1994) agree that educational outreach can be effective but they question whether cost effectiveness has been sufficiently evaluated. French (1996) describes a scheme where 24 practitioners trained as facilitators for dissemination and implementation of nursing research across 15 units but does not report any evaluation of this. Numerous posts in nursing exist with the remit, or part remit, of facilitation of R&D or some form of continuing education, yet evaluation of

their effect on the utilisation of research tends to be either non-existent or un-systematic. Clearly further research in this area is required.

Reminder systems have been found to be useful with doctors, in particular with drug prescribing. Harrison (1996) argues that patient-specific and clinician-specific dissemination is most successful i.e. patient-specific reminders or audit. In a review of 102 trials of interventions to improve professional practice (of doctors), computer-generated reminders have been found to be effective when the practitioners believed that the change in practice would have a positive outcome for patients (Oxman et al 1995). However, the appropriateness of reminder systems in nursing seems to be limited to perhaps nurses using computerised care planning or those involved in prescribing.

Mugford et al (1991) reviewed 36 studies on feedback designed to change practice. Feedback was more effective when clinicians already had an interest in the area or were conducting a review whereas unsolicited feedback was found to have little effect. Armitage (1990) found that even when great efforts were made to provide nurses with what seemed to be relevant research, the information was either rejected or ignored. Whilst the information provided by Armitage was unsolicited, in a study by Pearcey and Draper (1996) the topic had been identified by the nurses as an area in need of improvement yet the information provided continued to be ignored.

A study by Luker and Kenrick (1995) examined the effect of information packs on leg ulcer care with District Nurses. The topic of leg ulcer care was identified by the researchers as being both highly relevant and of high prevalence but the information was regarded as solicited by the nurses; it had been identified as an area in which more information or knowledge was required by District Nurses in an earlier exploratory study (Luker and Kenrick 1992). As many nurses had reported receiving high quality information, similar high quality packs were produced with research-based information. One hundred and thirty nurses completed a pre- and post-test questionnaire to test their knowledge on leg ulcer care. One hundred and nine of the

nurses received the research-based information pack with the remainder acting as controls. A significant knowledge gain was demonstrated six weeks after receipt of the pack in the experimental group, but was not evident in the control group. Unfortunately they did not enquire to what extent the nurses were basing their practice on the research-based knowledge.

Another study of the effect of dissemination of research-based material reiterates the disappointing effects when information is unsolicited. Williams and McIntosh (1996) evaluated the uptake of an information and support package for use by Practice Nurses with patients who had abnormal cervical smear results. The information and support package was developed from earlier research and then disseminated to all Practice Nurses in Greater Glasgow Health Board. The response rate to the questionnaire asking about use of the package was low, but of the 48 who did reply, 21 said they had not received the information package. Of those who had received the package, only 58% made use of it. The authors conclude the lack of use of the package was due to lack of time and incentives to use it.

There seems to be conflicting evidence in nursing about the use of information packs as a means of disseminating research to nurses. The three studies reported here in detail all gave out unsolicited information and only one evaluated the effect of information on practice. No clear conclusions can be drawn from these studies apart from that a variation in outcome appears to exist in relation to the type of healthcare professional, the material disseminated and the context.

In a review of 50 RCTs on the effectiveness of continuing medical education in the dissemination and implementation of research findings, the performance of the doctors improved and so, in some cases, did patient outcomes (Davis et al 1992). (The effect of education on research utilisation in nursing is considered in detail in the following chapter.)

Journal clubs have been proposed as an effective means of dissemination of research in both nursing and medicine (Hammick 1995, Kirchhoff and Beck 1995). In some journal clubs the members reviewed only one paper and therefore learnt more about how to review than about the research in one area. In other journal clubs members reviewed papers independently. This may be more useful for dissemination as a topic is covered in more depth. However some topics are quite large and difficult to cover effectively. It may take considerable time and effort to locate and review few papers of varied quality. Whichever format is followed there are undoubted benefits for the participants, but the ability for those individuals to translate their new knowledge into practice may be questionable.

Richardson et al (1990) support the idea of using a wide range of media for dissemination including popular trade press, radio press and television, videos and cassettes. However, use of mass media has its problems in that tends to focus on what holds ones attention rather than perhaps what is really important or, as described by Last (1989), it may 'popularise the trivial'.

The lack of evaluation of some of these methods of dissemination and the lack of synthesis of research findings in others was recognised in 1994 when an expert advisory group was set up by the Central Research and Development Committee to set the priorities of research in evaluating methods to promote the implementation of research in the NHS (Department of Health 1995). Amongst the 20 priority areas identified were some relating specifically to dissemination. These included identifying the main sources of information used, and the influence of the source and presentation of the information. The role of the media, reminder and decision support systems, the impact of clinical guidelines in disciplines other than medicine, and the role of undergraduate and pre-qualification training were also highlighted. A call for research proposals in the priority areas led to 28 projects being funded in 1995/6 with one study specifically addressing nurses' use of research evidence (Grimshaw and Wisely 1996). Whilst several studies were commissioned in some priority areas, none were commissioned in seven of them. Further rounds of funding may redress this

balance. The outcome of these studies was not known at the time that the study in this thesis was being developed.

Freemantle and Watt (1994) and Oxman et al (1995) argue that effective dissemination depends on the use of multiple means and that there is no 'magic bullet' solution to achieve effective dissemination of all types of information to all healthcare professionals. Matching the strategy to the context and targeting relevant information to the appropriate people and those in a position to make practice changes would seem particularly important.

## **CONCLUSION**

Research-based practice may be achievable in some nursing topics but in many others, research is still being developed. Nursing does not have a long-established intellectual tradition in many areas. In the late 1970s Myco (1980) argued that nurses did not read widely and had not developed an intellectual tradition. Nurses need not only the skills to read research but for research to become part of their professional practice. A questioning approach to practice is relatively new with nurses having relied on textbooks and didactic unreflective methods of learning (Farmer 1991).

Traditionally, research has been disseminated through journal publications but the literature is now so vast that information overload has resulted for many healthcare professionals (Deykin and Haines 1996). Nursing is no exception to this. Much of the literature is of very varied quality and many practitioners may feel they lack the skills to appraise the reports. It is possible to use reviews on a topic where an author has drawn together and interpreted some of the literature in an area. Accessing the original research may be difficult and in some cases unlikely whilst there are no systematic reviews in the area. Unsystematic reviews have limited value but again the problem is not exclusive to nursing. Deykin and Haines (1996) report that many traditional review articles in medical journals are also of poor quality.

As well as coping with the volume of literature, the language and complexity of reports causes further difficulties. Much research is written in a manner that makes it difficult to understand or may be of poor quality (Peters 1992, Rodgers 1994). Research tends to be reported in the research journals for academic scrutiny whereas practitioners tend to read other types of nursing journals. In particular, the practitioner may find it difficult to comprehend what the implications for practice may be unless these are made clear by the researcher. The wider use of short reports in professional journal might be a particularly useful strategy.

Whilst the impact of teaching critical appraisal skills to medical staff appears to be positive, research to date has failed to assess the impact of research courses and critical appraisal skills courses on research-based practice in nursing. It could be argued that such a level of critical appraisal skills is not required for all registered nurses, but if one accepts such a position then the likelihood is that most nurses will continue to be mystified by research, see it as someone else's business and base their practice on social norms and personal belief. If all registered nurses are to be accountable practitioners, taking personal responsibility for their own practice and basing that practice on up to date knowledge, then such a position is surely not acceptable. Nurses need to continue to develop research appreciation skills as fundamental to their practice

Research to evaluate methods of disseminating research is still in its infancy. Most studies in the dissemination of research have been in relation to medicine and these are not necessarily transferable to nursing. Furthermore, most studies are not UK-based which may severely limit their application due to the importance of contextual factors. However, it does appear that simply publishing research in journals or sending out unsolicited information has limited value. Unfortunately all studies to date tend to be focused on one particular approach and on one particular topic rather than a 'whole system' approach to dissemination. The lack of 'magic bullets' further highlights the complexity of dissemination and utilisation of research. It seems that

effective dissemination may require multiple means with a strategy appropriate to context.



## CHAPTER 4

### **THE UTILISATION OF RESEARCH**

In the previous chapter it was argued that methods of disseminating information on research findings in nursing require further study in the context of nursing in the UK to assess their effectiveness. Awareness of research findings can be seen as the first stage in utilisation (Rogers 1983), yet it cannot be assumed that utilisation will follow automatically from dissemination. Perhaps the acid test is the extent to which research findings are actually used in practice by nurses. In this chapter a discussion of research which assess the extent of research-based practice by nurses is presented. This is followed by a discussion of the four elements described by Rogers (1983) as influencing the adoption of innovations. As most of the studies are non UK based and hence may have limited applicability to the UK, the country or continent where the research was conducted is given. One particular study (Brett 1986, 1987, 1989) is reviewed in depth as a number of further studies proceed to base their methodology on that developed in this study.

#### **THE EXTENT OF RESEARCH UTILISATION**

##### **North American Studies**

Much of the early work on nursing research utilisation originated in North America. Ketefian (1975) found extremely limited use of research in recording of oral temperature whilst Kirchhoff (1982) found that many nurses continued with practices shown to be ineffective by research. In the late 1970s, a centrally funded project entitled the Conduct and Utilization of Research (CURN) was set up by the Michigan Nurses Association to disseminate research, facilitate change for the implementation of research and promote collaborative research (Horsley and Crane 1983). The project was felt to be successful but dependent on a wider organisational

commitment, the wide dissemination of relevant research findings and the relevance of research findings. A similar programme by the Western Interstate Commission for Higher Education known as WICHE (Krueger et al 1978) included research utilisation for nurses in its remit. The success of the programme was hampered by the lack of high quality studies on which to base practice developments.

Champion and Leach (1989) asked nurses to rate their agreement with ten statements about research use such as 'I apply research results to my own practice'. The mean for this ten item, five point Likert-type scale was 3.48 indicating on average, a slight agreement with statements concerning use of research in practice. Champion and Leach interpret this as a moderate commitment to using research in practice, yet the mean response falls only half way between the categories 'neither agree or disagree and agree'. Modal values may have been more enlightening. Furthermore, the generalisability of the study is restricted due to use of a convenience sample from one hospital in the south western part of the United States of which only 59 of 150 nurses (39%) responded.

Bostrum and Suter (1993) surveyed the population of nurses in California (approximately 7,000) and achieved a response from 1,588 (23%). The survey included demographic data, attitudes to nursing research, the research environment and the extent of involvement with research. This final scale included use of research findings in clinical practice. Respondents were asked whether they had made any research-based practice changes in the past six months (current involvement) and if they had made research-based practice changes in the past (more than six months ago). Fifteen point nine percent reported they had used research to change a nursing practice recently and 23.4% had made such a change in the past. A further study by Rizzuto et al (1994) used the same instrument and a similar methodology surveying 4,000 nurses. Of the 1,217 respondents (40% response rate), 24.6% reported using findings as a basis for changing practice at some time, and 21% were currently doing so. The level of research-based practice appears quite low but the study relies upon the nurses' ability to distinguish research-based and non-research-based practice,

which may be questionable. For example, research-based practice changes might have been instituted by nurse managers with the nurses then putting them into practice unaware of the research basis. In addition the nurses were only asked about changes in practice and not existing practice that was research-based.

*The 'Brett' Study*

All other North American studies have surveyed nurses using the approach developed by Brett (1986, 1987, 1989) based on Rogers' (1983) model of the diffusion of innovations. In Brett's approach, a range of relevant, substantiated nursing research findings that could be implemented independently by individual nurses and had been published in national nursing journals were selected. Nurses were then asked to self-report on the extent to which they were aware of, were persuaded by, used sometimes or always used these findings. (See Chapter 2, pages 26-28 for discussion in relation to Rogers' model). Scores for each stage of utilisation are generally assigned as in table 4.1. Each practice can then be awarded a cumulative research utilisation score (RUS) from zero - unaware of the practice - to four - aware of the practice, persuaded of its value and use it all the time. A total mean RUS across all the findings or practices is usually given. This approach does not rely on nurses distinguishing between research-based and non-research-based practices but still has the limitations of being a self-report of practice.

<b>Level of utilisation</b>	<b>Score</b>	<b>Cumulative score</b>
Aware	1	1
Persuaded	1	2
Use sometimes	1	3
Use always	2	4
Minimum possible research utilisation score (RUS) = 0 (unaware of practice)		
Maximum possible for each nursing practice and for total mean RUS on all 14 practices = 4 (Aware, persuaded and always use)		

**Table 4.1. Level of Research Utilisation Scoring System**

Brett (1986, 1987, 1989) conducted a study into the extent of use of nursing practice research findings and also assessed organisational factors thought to influence this. Brett (1989) initially surveyed 120 hospitals in North Eastern States of America on their levels of 'integrative mechanisms'. Integrative mechanisms were defined as organisational activities and structures that increased the flow of information on research-based practice in the hospital. Information on the extent of integrative mechanisms was collected from the nurse managers in each hospital. (These are discussed in more detail in the later part of this chapter in a consideration of the factors influencing research utilisation.) Of the 136 hospitals sampled, 98 returned questionnaires (Brett 1989). From this total of 98 hospitals, 19 were selected at random as representative of small (<250 beds) medium (250 to 500 beds) and large (>500 beds) hospitals with either high, medium or low levels of 'integrative mechanisms' (see table 4.2).

<b>Level of integrative mechanisms</b>	<b>Small hospitals (&lt;250 beds)</b>	<b>Medium hospitals (250-500 beds)</b>	<b>Large hospitals (&gt;500 beds)</b>
Low	2*	2	2
Medium	3	2	2
High	2	2	2

\* one hospital identified for inclusion.

**Table 4.2 Numbers of hospitals in each category selected for further study by Brett (1986)**

Once the 19 hospitals in the stratified sample were identified, registered nurses working in general medical, surgical or intensive care wards were selected. In ten hospitals, nurses were randomly selected from a list of all registered nurses whilst in the remaining nine hospitals, nurses were identified by a variety of random and non-random means. The generalisability of the study may be limited by this lack of random sampling. Nurse managers might have chosen respondents whom they thought would be interested or provide a favourable response. A total of 438 nurses were thus identified and sent questionnaires to assess their level of research-based practice. Brett (1986 and 1989) reports a response from 278

(63%) nurses. From these 278 respondents, 12 nurses were randomly selected from each of the 19 hospitals, apart from the small hospitals with medium integrative mechanisms, where a total of 24 from all three hospitals in this category were selected (see table 4.2). A total of 216 nurses were then included in the analysis. The justification for selecting equal numbers of nurses per cell is not given but might be assumed to make two-way analysis of variance calculations more straightforward. However weighting calculations for cells of unequal numbers might have been conducted in order to include all nurses responding to the questionnaire. The sampling procedure is thus multilevel with a mixture of probability and non-probability sampling which compromises the generalisability of findings and the power of statistical analyses. Without known probabilities, weighting calculations cannot be conducted on the extent of research-based practice and the applicability to the target population is limited.

In Brett's (1986) survey, clinical nurses were asked about their level of utilisation of 14 research-based nursing practices, along with demographic data. The reliability and validity of the tool to measure level of adoption was assessed in a pilot study with 25 nurses studying for a MSc. Test re-test reliability resulted in a Pearson's  $r$  of 0.83 demonstrating a high level of correlation between the two sets of results. Internal consistency of the total mean RUS was assessed with Cronbach's alpha reaching 0.82 in the pilot study and 0.95 in the main study, although Brett (1987) conducted this internal reliability analysis on 277 nurses rather than the 216 on which the results of the study are reported. However, it would appear to be valid to take a mean across all 14 practices to give one total mean RUS but the reliability of the scale might have been more accurately assessed by a pilot study with a sample the target population of clinical nurses rather than those studying for post-graduate degrees.

Following criteria developed in the CURN project (Horsley and Crane 1983), the 14 practices were all chosen as relevant to medical and surgical nursing practice, supported by research with at least one replicated study, recently published in the

national nursing press and were capable of being implemented by the individual nurse independently. All 14 were examples of the direct use of research, being predictive findings immediately applicable to practice. No examples of indirect use of research were included. It is not clear from Brett's publications or thesis whether this was intentional or not. No information was collected on the attributes of the innovations themselves which have been proposed as significant factors influencing the adoption of research findings (Meyer and Goes 1988, Rogers 1983).

Of Brett's (1987) respondents, three quarters were Staff Nurses with the remainder being senior clinical nurses, nurse specialists and head nurses (Charge Nurses). On average, 70% of the nurses were aware of the practices and 58% were persuaded of their usefulness. The level of adoption varied according to the nursing practice concerned. Over 50% of the nurses used 10 of the 14 practices at least sometimes yet the majority were persuaded of the value of only 7 out of the 14. However another way of presenting the figures might suggest that research utilisation was less extensive. Brett also calculates the mean RUS for each practice. Four of the nursing practices were used sometimes and only one (closed sterile urinary drainage) was always used. Therefore nine of the practices were infrequently being used by the nurses. Brett also gives the total mean RUS as 2.17 indicating the nurses were, on average, at the stage of persuasion. As no sampling error or confidence intervals are given, the reliability of this figure as an estimate of the population mean or variability within the sample cannot be made. This also illustrates difficulties with the different ways of presenting the findings and with their interpretation.

For all 14 practices, the numbers of nurses in the awareness stage was higher than in the persuasion stage. But for one practice (catheter clamping prior to removal), there were more nurses in the stage of using sometimes than were persuaded of its value. Use without belief was found for 23% of nurses in this practice. Slightly lower levels of use without belief also occurred in two other practices.



Apart from these deviations, the scoring system for level of research utilisation scaled sequentially as expected. These findings, on the whole, support the notion of linear progression throughout the stages of utilisation and therefore enable scaling the stages from zero to four.

#### *Replication of the 'Brett' study*

A replication of Brett's study was conducted by Coyle and Sokop (1990). They randomly selected ten hospitals in Carolina (USA) but only included medium-sized ones to control for the effect of hospital size. Twenty nurses working in general medicine, surgery or intensive care were selected at random from each hospital. One hundred and thirteen (56%) returned questionnaires assessing their level of research utilisation. Over half of the respondents were aware of 9 of the 14 research findings and over half of the sample reported utilising 8 of the 14 practices at least sometimes. However, up to 72% of the nurses were unaware of an individual nursing practice. The mean RUS for each practice indicated that, as in Brett's study, only one practice was at the stage of use always (closed urinary drainage), with a further three practices being at the stage of use sometimes. Five of the practices were still at the stage of awareness only. The total mean RUS was 1.96, which is consistent with the findings of Brett (1987). This suggests that, on average, the nurses were persuaded about the value of the findings. Use without belief is not reported but figures given in a table suggest that there was use without belief for at least 22% of nurses for one practice (urine testing on first or second voided specimens). Coyle and Sokop (1990) suggest that reporting the percentage of only those nurses aware of a practice might give a better representation of the adoption behaviour of nurses. In their study, 56-98% of nurses who were aware of a practice were persuaded of its value (except for the practice of urine testing as mentioned above) and 71-100% used them at least sometimes.

Further studies using a similar methodology were conducted by Varcoe and Hilton (1995), Michel and Sneed (1995) and Rutledge et al (1996) although these



later studies modified either the scoring system or the nursing practices to ensure relevance to the population. One European study has also been conducted using this approach (Berggren 1996) although this was with midwives. Comparative results (where possible) are given for these studies in table 4.3.

Author	Brett (1986)	Coyle & Sokop (1990)	Michel & Sneed (1995)	Varcoe & Hilton (1995)	Berggren (1996)	Rutledge et al (1996)
n (response rate) Context	278 (63%) USA, Med/Surg & Critical Care	112 (56%) USA, Med/Surg & Critical Care	157 (84%) USA, Sigma Theta Tau members	183 (42%) Canada, Med/Surg & Critical Care	84 (74%) Sweden, Midwifery	1100 (NA) USA, Oncology
No. of practices of which 50% or more of nurses were aware.	10/14	9/14	- (total of 5 practices)	-	10/14	8/8
No. of practices of which 50% or more of nurses were persuaded.	7/14	8/14	-	-	8/14	-
No. of practices used at least sometimes by 50% or more of nurses.	10/14	8/14	-	6/7	4/14	-
No. of practices used always by 50% or more of nurses.	2/14	0/14	-	-	3/14	-
Percentage of nurses unaware of some practices.	66%	72%	-	-	83%	47%
Total mean adoption/research utilisation score (max. score 4, always use).	<b>2.17</b>	<b>1.96</b>	<b>2.21</b>	<b>2.15*</b>	<b>2.06</b>	<b>3.33**</b>

- no data available \* max. score of 3 - always use \*\* includes only 330 nurses who responded to all 8 practices NA= Not applicable

**Table 4.3 The utilisation of specific research-based practices in comparative studies.**

Michel and Sneed (1995) studied North American adult medical and surgical nurses who had been prepared to first degree level and above. Two hundred nurses were randomly selected from members of a professional nurses group in one hospital and an 84% response rate achieved (n=168). They identified five nursing practices from a review of nursing journals as being relevant, well publicised and having a sufficiently strong research base to warrant implementation. The total mean RUS for all the nurses across all five practices was 2.21 indicating that the nurses were mostly only persuaded about using the practices and in the very early stages of beginning to use them. This study was limited in surveying only first level degree and Masters prepared nurses in one site. Furthermore, they included non-clinical staff (43%) in the sample and asked them how they used the research findings in relation to their work in education or management. The validity of this methodology in assessing research utilisation for teachers and managers cannot be assumed and comparability of the findings to other studies of research utilisation in clinical practice may be limited.

Varcoe and Hilton (1995) asked a stratified random sample of registered nurses in Canada to rate their use of research in practice and to self-report use of ten specific research-based practices. The sample was stratified by educational level and hospital size. A response rate of 42% (183/450) was achieved. The authors acknowledged the potential biases of the study resulting from this low response rate. It may be that only nurses who had a high level of interest in research and research-based practice were moved to respond. In comparison, responders were more representative of younger, more recently qualified degree nurses than non-respondents. Ten specific research-based practices were extracted from the study by Brett (1987) but the scoring of level of research utilisation was modified. Nurses were asked to report using the practices from always (scoring 3) to sometimes (scoring 2) to never (scoring 1). Justification for such a modified form of scoring is not given which makes comparison of the findings to those of other studies problematic. They also discounted findings on the level of research utilisation of three of the practices because over 30% of nurses in their study had stated they were not applicable to their work setting. The authors

argue that the level of utilisation of specific research findings is comparable or higher than that reported by Brett (1987) and Coyle and Sokop (1990) yet the scoring systems were not directly comparable and three practices were excluded from the analysis.

Rutledge et al (1996) studied the extent to which oncology Staff Nurses used eight research-based practices in the USA. They took a random stratified sample of 2000 members of an oncology nursing society and asked them to pass on questionnaires to other nurses who were not members of the society. 769 (39%) society members responded plus a further 331 usable responses were generated from network sampling with non-society members. Brett's RUS system was used but they only assessed two of her original 14 research-based practices. Six others were chosen for inclusion as relevant to the practice of oncology nurses to give a total of eight practices. The overall reliability of the scale (Cronbach's alpha) was found to be 0.75 (n=1,100). In general, the level of utilisation of the findings seems quite high with all eight practices being used at least sometimes on average and one practice being used always on average. The overall total mean RUS is comparatively high at 3.33 but only nurses who were at least at the stage of awareness for all eight practices were included in the analyses of the results on extent of research utilisation. Those who were unaware of at least one of the eight practices (scoring 0 for this one practice) were excluded from further analyses. Rutledge et al (1996) justify this as a procedure adopted by Brett (1987) yet Brett does not report this. Rutledge et al (1996) were effectively measuring research utilisation by nurses who were aware of research-based practices. This reduced their sample from 1,100 to 330. They conclude that oncology nurses have a higher level of research utilisation in their practice than nurses in other studies but this cannot be justified, as the sample of nurses used was not comparable. A large proportion (70%) of respondents were excluded in the analyses who would have been included in the methodology employed by other studies. Furthermore, the overall response rate was low (39%) and the sample consisted primarily of members of a professional nursing society who may not be representative of all oncology nurses.

Comparing the results of the studies presented in table 4.3, there was little variation in them apart from the study by Berggren (1996) where the use of practices 'at least sometimes' seems comparatively low. Rutledge et al (1996) appear to find oncology nurses making more use of research findings in practice although in calculating their total mean research utilisation score (RUS), they only included nurses who were at least aware of all eight practices. The total mean RUS for nurses studied by Varcoe and Hilton (1995) is difficult to compare as they used a modified scoring system but the proportion of practices used at least sometimes by the majority of nurses in the study is comparatively high. For most studies, the overall level of research utilisation seems to be somewhere just above two, at the stage of persuasion, from which one might conclude that the extent of research utilisation is quite limited. However, very few of the practices included in these studies are of indirect use and practices were deliberately chosen so that could be implemented independently by the nurse, which limits the generalisability of these findings.

## **UK Studies**

In the UK, research has taken a variety of approaches including studying utilisation of a single practice, an action research approach, or investigating the perceptions of nurses about the extent to which their practice is research-based.

### *Utilisation of a single practice*

All three studies on research utilisation focusing on a specific area of practice have been with community nurses. Whilst Luker and Kenrick (1995) evaluated the impact of an information pack on leg ulcer management on the knowledge of community nurses (Chapter 3, page 51) no evaluation of changes in practice were evaluated. Williams and McIntosh (1996) evaluated the uptake of a research-based information and support package for use by Practice Nurses with patients who had abnormal cervical smear results (Chapter 3, page 52). The response rate to the questionnaire evaluating use of the package was low but, of those who received the package, 58%

made use of it. The lack of utilisation was thought to be due to lack of time and incentives.

#### *Action research approach*

Whilst studies using an action research approach have addressed the change to research-based practice rather than estimating current levels of research utilisation, they perhaps give an indication of specific areas of practice where research is or is not informing practice at a local level. Hunt (1987) set up an action research project to address research utilisation in the areas of mouth care and pre-operative fasting. Despite the involvement of ward nurses, there was only very limited success; there was scanty uptake of new mouth care practices and no change in pre-operative fasting regimes. Pearcey and Draper (1996) encountered a similar lack of progress in their action research study to introduce research-based practice in pre-operative information giving. No protocols to change practice were produced although the authors argue there may have been individual indirect use of research findings but this was not followed up in the study.

#### *Perceptions of the extent of research utilisation*

Three UK studies rely upon nurses reporting their perceived levels of research utilisation. Armitage (1990) used a small working group to look for examples of research utilisation. Few, if any, examples could be found and the little research that was being used was done so without any real depth of understanding. Lacey (1994) asked nurses (n=20) generally about their perceived utilisation of research. She found that nurses tended to agree that they were utilising research in their practice. The validity of this self-report was argued to be established by nurses giving examples of research-based practices they used during an interview. However, Luker and Kenrick (1995) found that nurses could not easily distinguish between research-based and practice-based knowledge seeing this as an artificial distinction. Furthermore, in the study by Varcoe and Hilton (1995), which recorded both perceived levels of research utilisation in general and the use of specific findings, a correlation of 0.38 (Pearsons  $r$ , n=183) was reported indicating a low correlation (Munro and Page 1993). It would



appear that perceived utilisation of research and utilisation of specific findings must be seen as distinct concepts. The ability of measures of perceptions of research utilisation to predict the use of research findings may thus be limited.

## **INFLUENCES ON THE UTILISATION OF RESEARCH**

Rogers (1983) social interaction model proposes four elements to the process of adopting innovations: the characteristics of the innovation itself, the communication channels, time and the social system. Potential factors influencing the utilisation of research in nursing are then discussed in these terms.

### **The Innovation**

No studies in nursing could be found to describe the characteristics of innovations or the findings of research. Brett (1987) acknowledges that little is known about why some research findings are used more widely in nursing than others. What is clear in nursing is that some innovations are highly popularised and quickly embraced sometimes without sound evidence for use of the practice; for example, the nursing process and Primary Nursing. A similar situation appears to exist in medical practice (Deykin and Haines 1996) yet there has been some research into the attributes of medical innovations that relied upon technology and equipment. Meyer and Goes (1988) found that the attributes of an innovation accounted for 37% of the variance in predicting adoption of technology-based innovations by doctors.

Comparison of the extent of use of indirectly and directly applicable research findings might be one way of gaining an insight into the perceived attributes of the findings. Yet all but one study of nursing research utilisation focuses exclusively on directly applicable research findings. Berggren (1996), in a study of research utilisation by midwives, did include some research findings that could be perceived as enlightening and indirectly applicable to practice. She concludes that midwives



find, "research which is linked to practical experience is easier to adopt" (Berggren 1996 page 468).

The influence of the attributes or characteristics of nursing research findings upon their adoption is then unknown. Methodologies to study the attributes of nursing research findings require to be developed.

### **The Communication Channels**

Rogers (1983) proposes that the source of learning about a new innovation influences the decision about adoption. Within nursing, several communication channels have been suggested as potentially influencing research utilisation. These comprise educational programmes including the study of research, reading journals, attendance at conferences, the employment of specialist nurses, and involvement in research activities. Strategies focused exclusively upon dissemination of research findings have been addressed in Chapter 3.

Education is examined in terms of both level of academic achievement and in terms of specific research courses. Self-directed reading is also considered to form part of continuing professional education and hence is included here. The impact of educational preparation on the utilisation of research has been addressed in only a few prospective studies. However, several studies have looked at the level of academic preparation of a nurse and the associated levels of research utilisation although most of this work is North American in origin. UK studies of research utilisation are considered first followed by a discussion of the findings of selected North American studies.

There is now an expectation in the UK since the Post Registration Education and Practice project (PREP) that registered nurses must be well informed (UKCC 1990). Pre-registration education of nurses is now exclusively at least at Diploma level with the introduction of the 1992 programmes. However, one might ask whether this equips them sufficiently to be able to read, critically analyse and synthesise findings from

research papers. It could be argued that nurses require these skills to be meaningful consumers of research. The majority of existing nurses were trained prior to 1992 and are unlikely to have had much formal education in research. Whilst the potential to create practitioners who are more aware of research-based practice exists with the new programmes of nurse education, the needs of those qualified prior to these new programmes must not be overlooked.

While most of the studies in nursing research utilisation in the UK are small-scale, they do provide contextually based insight to the impact of education on research utilisation. Lacey (1996) found that self-reported use of research in practice had occurred for 65% of registered nurses six months after taking a research course. However no sample size is given and the response rate to the survey was only 52%. Whilst self-reports of changes in practice have been questioned in terms of achieving validity, the nurses in Lacey's study could again give clear examples of ways in which research was being utilised in practice. In Hunt's (1987) study, small groups consisting of a nurse manager, nurse teacher and a clinician were formed as part of an action research project in research utilisation. The nurse teachers undertook literature searches, produced summaries and guidelines, and held study days on two particular areas of research-based clinical practice. Whilst policy changes and changes in teaching followed, there were limited changes in practice at ward level. In a similar action research study, Pearcey and Draper (1996) also found that, despite having an identified facilitator to help ward nurses identify the need for change to research-based practice and provide access to relevant resources, no practice changes followed.

North American research has tended to adopt a survey-style approach and looked for associations between research utilisation and educational preparation. Champion and Leach (1989), Coyle and Sokop (1990), and Varcoe and Hilton (1995) found no association between utilisation of research and educational level. Using a similar methodology with Swedish midwives, Berggren (1996) also found no association. However, a study of nurses in Israel found that higher education degrees were related

to the use of research findings in that the nurses were more able to cope with research activities and held a positive attitude towards research (Ehrenfield and Eckerlings 1991). Rutledge et al (1996) in their study of oncology nurses in the USA, found conflicting results with regard to level of research utilisation and education. When looking at the use of the individual research-based practices, they found an inverse correlation between highest educational qualification and utilisation of research for two of the eight practices. However, they acknowledge that numerous statistical tests had been conducted by examining the correlation between all demographic variables and each of the eight practices individually, as well as the total mean RUS. Spurious significant findings were therefore possible although Bonferroni's correction on the alpha significance level was carried out. Perhaps more enlightening is their analysis of the data by grouping nurses into high, medium and low levels of awareness of the eight practices. The interpretation of this analysis is limited, though, because only a chi-squared statistic was computed. This is unfortunate; the interval data could have been subject to more sophisticated techniques to identify where significant differences between groups might exist and indicate the direction of any associations in the data. The authors conclude that nurses with higher levels of formal education tend to be more aware of research-based practices. However, nurses with high levels of awareness also tended to be oncology society members, read more journals regularly, have better access to nursing journals and attend conferences where research was presented in contrast to nurses with low awareness. The intercorrelation between these variables is not explored. Rutledge et al (1996) also suggest from these findings that formal education may facilitate the adoption of research-based practice. Whilst a relationship between level of education and levels of awareness of research-based practices has been demonstrated, one cannot assume that awareness will lead on to utilisation as causal relationships were not established in their study.

Brett (1987) found no significant relationship between the level of education of nurses and research utilisation. However, a weak relationship between the percentage of nurses with undergraduate degrees employed in a hospital and level of research utilisation was demonstrated ( $r=0.123$   $p<0.05$ ). Brett interprets this as "increasing the

educational level of the staff may be associated with increased use of research findings” (Brett 1987, page 348). Yet the emphasis on the proportion of nurses employed at an educational level seems to have been lost in this interpretation. Further interpretations may be that hospitals with a strong commitment to providing educational development opportunities or hospitals that value highly educated nurses are more likely to promote research-based practice. However, Brett also found a negative correlation between research utilisation and the percentage of nurses employed with a Master’s degree ( $r = -0.201$   $p < 0.01$ ). Brett argues that there were perhaps too few Master’s prepared nurses in the sample to make any inferences.

Michel and Sneed (1995) did succeed in recruiting sufficiently large numbers of Master’s prepared nurses (49% of respondents) so that direct comparison between them and first degree level nurses could be made with more certainty. They found that nurses of a higher educational level were more likely to utilise research in their work. However this study included non-clinical nurses. Although Michel and Sneed gave no indication of the distribution of nurses by educational level and job title, one might reasonably expect the most highly qualified staff to be employed in education and management posts; as such, it might have been easier for them to utilise research in their more autonomous work environments. For example, as a teacher one can control independently what knowledge to impart to students, whereas a practitioner may find that use of the knowledge in practice poses a whole different set of problems such as resources and the co-operation of other staff. Therefore, it cannot be concluded from this study that preparation to Master’s degree level is associated with research utilisation by nurses in clinical practice.

The influence of education on research utilisation is therefore unclear. Conflicting findings exist concerning the level of education and research utilisation, and all except one derive from North American studies. Due to the descriptive correlational design of these studies, it is not clear whether education does in fact lead to research-based practice or whether higher education attracts particular types of nurses who are more likely to have research-based practice.



Studying research has been identified in several studies as being associated with more positive attitudes to utilisation (Champion and Leach 1989, Pearcey 1995). Comparing different types of education, Lacey (1994) found nurses felt that courses led to increase in knowledge of research and improved morale whilst degree courses often expected engagement in some type of research.

Brett (1987) found significant relationships between research utilisation and the time a nurse spent reading and attending research conferences. These findings were confirmed in the replication study by Coyle and Sokop (1990). Yet Bostrum and Suter (1993) found research utilisation to be most closely linked with involvement in collecting data and in collaborating with others; it was less associated with nursing education, attitude toward research, position or experience. Rizzuto et al (1994) report that research activities in general were most closely associated with the number of research courses attended, awareness of research supports and a positive attitude toward research. However, research utilisation was only 1 of 12 factors determining research activities and there is no analysis specifically in relation to research utilisation. The nurses did report, though, that it was one activity that was of particular interest to them.

Brett (1987) collected data on the source of learning about a practice including in-service teaching, conferences and reading the literature, yet does not report any analysis of these sources and relationship to research utilisation. Coyle and Sokop (1990) and Berggren (1996) report using the same questions as Brett in their research studies which collect data on the source of learning about specific practices but no findings are reported in their publications. Rutledge et al (1996) do report the sources of learning about their eight practices but the data is not analysed in relation to the level of research utilisation.

There is conflicting evidence then about the effect of different means of 'communicating' the findings of research on its utilisation and little evidence

originating from the UK or Europe. Studies have failed to analyse the effect of different means of learning about a research-based practice on the extent of utilisation of the practice.

## **Time**

Rogers (1983) suggests that those who are early adopters of an innovation will be seen as opinion leaders if their ideas are not too far ahead of the majority. These opinion leaders are more likely to be of a higher social status, have a highly connected social network, actively seek out information and be more willing to take risks.

Phillips (1986) believes that there is a lack of role models in nursing, of those who use research, who question practice and who challenge the status quo. However, the most powerful opinion leader and role model in the ward has been suggested to be the Charge Nurse (Pembrey 1980, Fretwell 1982 and 1985, LeLean 1982). The authority of the Charge Nurse to direct nursing practice in the ward was clearly demonstrated by Hunt (1987). She suggested that the Charge Nurses had a high degree of autonomy because in her study many of them chose to ignore new guidelines on mouth care despite being involved with development of the guidelines. However, another interpretation might be that the Charge Nurses did not perceive a problem with mouth care so saw no need to change. One of the reasons for the refusal of information on research-based practices has been suggested to be a lack of ownership (Armitage 1990). In 1990, Armitage used a small working group to investigate research utilisation. However, the nurses felt the information provided by the working group was not relevant to their practice problems. Armitage concludes that nurses need to identify and solve problems for themselves. Precursors to this are the ability to question current practice and feelings of having sufficient authority to effect any changes. Perhaps Charge Nurses would not be seen as opinion leaders and become early adopters without a questioning approach to practice.



Rutledge et al (1996) attempted to describe the characteristics of oncology nurses with high levels of awareness of research-based practices and those with low levels of awareness of research-based practices. They describe those with low levels of awareness as more likely to be employed in the private sector and not be a member of the oncology nursing society, thus having a restricted social network. Conversely those with high levels of awareness had more opportunities for social networking through their place of work and society membership. They also tended to have a higher level of education and access to nursing research journals. This description of early adopters would seem, in part, to support Rogers (1983) theory of the characteristics of early and late adopters. An analysis of the role of Charge or Head Nurses was not possible as all of the nurses in their study were employed at Staff Nurse level.

### **The Social System**

The structures or patterns of behaviour within systems and their subsystems have been proposed by Rogers (1983) to influence the adoption of innovations. Haines and Jones (1994) support the view that the use of research in practice is less of an individual effort and more an organisational issue and that changes in practice can therefore be brought about through changes in the organisation and its culture. Such a view now seems to be the consensus in nursing (Closs and Cheater 1994, Cavanagh and Tross 1996, Kitson et al 1996). Armitage (1990) clearly illustrated this point with a description of the difficulties faced when strategies for change have been dependent upon individuals.

“Individuals who have attended post basic and continuing education courses are often fired with enthusiasm for change. It is well recognised by many senior nurses that on their return to the work place it is often quenched by the same system and circumstances from which they came” (Armitage 1990 page 14).

A review of literature describing the hospital as an organisation is given below followed by a discussion of literature concerning the ward environment as a relevant subsystem of the organisation for nurses.

The influence of hospital culture on nursing practice was highlighted by a study of Magnet hospitals in the 1980s. In 1981 the American Nurses Association commissioned a study to look at nurse shortages in hospitals in the USA. The study identified 41 Magnet hospitals, so called because they were able to recruit and retain nurses, and also had reputations as being good places to work. Follow up studies of the hospitals were conducted in 1986 and 1989 (Kramer & Schmalenberg 1988a and 1988b, Kramer 1990). Enduring features of the hospitals were; low staff turnover, higher than average staffing levels, a high proportion of Registered Nurses (RNs) employed, a decentralised participative management style, strong leadership, supportive managers, flexible working, support for education and development, a high proportion of nurses educated to baccalaureate level, and a rewards system for achieving excellence. Whilst research-based practice was not assessed, the potential for innovation and practice changes based on the best available knowledge was clear. Kramer & Schmalenberg (1988a) describe the hospitals as dynamic institutions whose nurse leaders were successful in creating and infusing values of excellence throughout the hospital. The values of doing one's best, valuing individuals (both patients and staff), that most nurses should be innovators and of open informal communication were thought to be key. A flattened lean, decentralised management structure was seen in all but two of the Magnet hospitals and was thought to enable flexibility, communication and autonomy in clinical decision making by Staff Nurses. Kramer & Schmalenberg (1988b) summarise the hospitals as:

“...infused with values of quality care, nurse autonomy, informal, non rigid verbal communication, innovation, bringing out the best in each individual and striving for excellence. They are led by nurse leaders and managers who are zealots in holding and promulgating these values“ (Kramer & Schmalenberg 1988b page 17).

Whilst the culture and healthcare system in the United States differs in significant ways to that in the UK, it appeared that authors on both sides of the Atlantic were beginning to advocate a hospital-wide, organisational approach to achieving quality of care under pinned by evidence-based and research-based practice.

In the UK the impact of the organisation of hospitals on research-based practice has not been assessed. However, Peters (1992) suggests that teaching hospitals may be more aware of recent research because staff work towards promotion and strong links with academic departments exist. This may be the case for medicine but whether nurses in teaching hospitals are more aware of research than those in non-teaching hospitals is unclear. Furthermore, Peters suggests that in non-teaching hospitals and 'peripheral' hospitals, staff may read and be up to date but lack the culture and support to act upon research.

In the USA, part of a study by Funk et al (1991b) examined nurses' perception of their work setting in relation to research utilisation. They describe the development of the BARRIERS scale where nurses are asked to rate 28 items according to how much of a barrier to research utilisation they are perceived to be. The 28 items form four subscales; the nurse's research values skills and awareness, characteristics of the work setting, characteristics of the research, and presentation and accessibility of the research. In a survey which included 924 clinical nurses, Funk et al (1991b) found that all eight items in the characteristics of the work setting scale came in the top ten rated barriers to research utilisation. Seventy five percent of the nurses rated a lack of authority to change practice, a lack of time to implement ideas and a lack of awareness of research as great or moderate barriers to research utilisation. When asked what would facilitate research utilisation, they most frequently suggested more administrative support and encouragement. Other studies have been conducted using the barriers scale in North America (Walczak et al 1994, Funk et al 1995, Barta 1995) with nurse clinicians, educators and managers. Not surprisingly each group has a slightly different perspective on what the barriers might be.

Walczak et al (1994) conducted a survey with a convenience sample of 82 nurses working in a national cancer centre that comprised 49% of the total registered nurse workforce. The barriers scale was modified significantly being reduced to only 11 items, including the addition of other items modified from a study by Miller and Messenger (1978). The scale for responses to the items was also different to that of

the original barriers scale. The findings of this study are therefore not directly comparable but the authors indicate a lack of time to investigate research related to clinical practice as the main barrier to utilisation. They go on to point out that more than 80% of their respondents felt that a lack of knowledge or skills to evaluate research, that implementing suggestions and that a lack of findings relevant to their practice were barriers either occasionally, frequently or always. However, they fail to discuss or even note that a lack of authority to implement research findings was a barrier either frequently or always for 57% of the nurses. This is second only to the item on lack of time to investigate research. Similarly a lack of rewards for using research in practice was perceived by 56% of the nurses at least frequently. Both of these neglected items are characteristics of the organisation.

Whilst the barriers scale has been used on several occasions in the USA and the internal consistency of subscales has been demonstrated across studies, the scale has not been used elsewhere nor its validity and reliability been established with populations outside the USA.

Two other North American studies have highlighted the association of job satisfaction with research utilisation. Brett (1986) and Coyle and Sokop (1990) found that higher research utilisation was positively correlated with job satisfaction. The authors offer little explanation of these associations but an interpretation could be that both variables reflect the organisational culture in terms of the support and encouragement available to nurses. Funk et al (1991a) support this view arguing that those who use research in practice have enhanced perceptions of themselves as professionals and are more satisfied.

It has been proposed that change to research-based practice may be effected through changing hospital policy and procedure (Edwards-Beckett 1990, Keefe et al 1988, Riesch and Mitchell 1989). However, such a strategy appears to be of little value. Coyle and Sokop (1990) and Michel and Sneed (1995) both concluded that hospital policy might be an effective means to influence practice because they found a

correlation between the adoption of a practice and the nurses' perceptions that a hospital policy exists. However, Brett (1987) found that existence of a hospital policy bore no relationship to utilisation of a research finding. It seems that the nurses had little actual knowledge of the policies and procedures. Yet where nurses perceived that a policy existed they were more likely to be using research findings in practice. Whether belief that a policy exists leads to adoption or whether adoption of the practice leads to a belief concerning a policy is unclear. When the smaller hospitals were studied separately more policies were associated with lower levels of research utilisation, suggesting that increased centralisation of authority over nursing practice may not lead to practice development.

The size of an organisation may affect the ability of staff to make changes in practice. In the hospital setting, one might expect that the large, acute specialist teaching hospitals would have a higher level of research-based practice. However Brett (1986) also found that research utilisation was directly related to the size of the hospital. In larger, urban hospitals where extensive communication channels and research resources were available, nurses were less likely to utilise research. Nurses in smaller, rural hospitals with similar communications channels and research resources were more likely to utilise research. In small hospitals, there was a positive correlation between utilisation of research and being involved with the conduct of research and having a high exposure to nursing journals. However, in the large hospitals all categories of potential influencing factors (including access to conferences, availability of time for study, exposure to publications, existence of research posts and committees, incentives for and involvement in research) were found to be negatively correlated. There were no significant relationships to research utilisation scores in medium sized hospitals. Size of organisation and perhaps location were major influencing factors. However, there is no evidence that the existence of mechanisms such as journal availability, libraries, conferences and research posts were actually used by and affecting nurses at ward level in any of the hospitals. It would seem that mechanisms designed to create a climate for research utilisation, such as nurse research posts, attendance at conferences and access to



journals may be introduced, but that complex organisational factors may be more important in influencing large-scale changes. Moreover, size and complexity of an organisation might negate any positive influences of the potential influencing factors examined in this study.

Varcoe and Hilton (1995) found that whilst utilisation of specific research-based practices was not significantly different in large, medium, and small hospitals (following Brett's criteria on size), there were significant differences in organisational variables between the different sized hospitals. The perceived level of support for using research findings (including research climate and infrastructures for research) was rated highest in large hospitals, lower in medium hospitals and lowest in small hospitals. Moreover, research climate and infrastructures for research were the two variables where a significant correlation with utilisation of specific findings was demonstrated. These two variables were intercorrelated and also correlated with other organisational factors such as the value placed on research and the expectations for research use by senior nurses. Utilisation of specific research-based practices was then related only to organisational factors. Interestingly, the nurses perceived use of research which they rated on a ten point scale was unrelated to organisational variables and related only to individual variables.

The support of managers has been identified as one of the most important factors in facilitating research utilisation (Hunt 1987, Armitage 1990, Funk et al 1991a, Lacey 1994). Champion and Leach (1989) found that support was not significantly correlated with research utilisation but when they broke down the scale into individual items they found that the support of key managers, including the Director of Nursing and Head Nurse (Charge Nurse), was significantly correlated with utilisation of research. Their support was needed to provide time for studying and reading, for access to courses and to show that they valued research utilisation by including it in appraisals and rewarding its use.



The constituents of management support seem to be that of facilitation; providing access to ongoing education, encouraging staff to take ideas forward, representing staff within the bureaucracy, promoting a participative management style, ensuring high levels of well qualified nurses, disseminating research information and devolving authority for action to nurse/ward level.

“Decentralised administration and shared governance offer ways to give greater authority over practice to clinicians” (Funk et al 1991a page 93).

A lack of autonomy has been cited by nurses in several studies as being a barrier to research utilisation.

“Nurses who have ideas about how they wish to alter practice at times feel powerless to act as the final decision is not theirs to make when other disciplines are involved, for example with drug administration and pre-operative fasting” (Armitage 1990 page 13).

In a pilot study with 20 senior Staff Nurses and Charge Nurses, Lacey (1994) found that the biggest barriers to research utilisation were thought to be a lack of autonomy and not being able to challenge medical staff or managers in introducing change. In relation to one practice (pre-operative fasting) the nurses felt that there was lack of co-operation from medical staff and theatre staff in introducing research-based practice. In a later study of nurses attending a research course, Lacey (1996) found that those who had been unable to implement research-based changes in practice faced a major hindrance in terms of a lack of autonomy, which was equated with a lack of seniority. Despite having quite positive attitudes to research, midwives in Meah et al's (1996) study felt a lack of autonomy in trying to implement research-based practice. They perceived not only a lack of support from managers but active opposition from medical colleagues. Hunt (1987) also found that nurses perceived a lack of co-operation from medical and theatre staff when attempting to introduce research-based pre-operative fasting times. However, when medical and theatre staff were approached by the nurses in Hunt's study, they were actually found to be co-operative.

It is not clear whether a lack of co-operation by medical and other staff inhibits research utilisation or if nurses in a climate where a lack of co-operation and managerial support is perceived, are also inhibited in developing research-based practice. The nurses in Hunt's study found the disruption to their routine when trying to introduce individualised pre-operative fasting times difficult and unacceptable. The nurses viewed themselves as victims of change rather than initiators and lacked confidence in making individual decisions about patient care.

“Reliance on established routines would appear to be a means of keeping control and stability in unpredictable and ever changing conditions” (Hunt 1987 page 109).

## **CONCLUSION**

The current status of research utilisation has been the subject of much speculation and few research studies. Studies conducted in the UK have been small-scale and mostly descriptive or used an action research approach. Studies in the USA and Canada have also examined the utilisation of specific research findings as opposed to perceived levels of general research utilisation. It seems that specific and perceived research utilisation may be two distinct concepts and, as such, research findings between these types of studies cannot be compared. Furthermore, nurses in the UK seem to be confused about what constitutes research-based practice and may not be able to distinguish this sufficiently for reliable reporting of levels of research utilisation. All studies in the UK rely on self-reports of research utilisation with only one study (Lacey 1996) attempting to validate such reports.

A multitude of complex interacting factors including those at a personal and an organisational level affect research utilisation. The influence of the attributes of the research findings themselves has been a neglected area of study with only one project with doctors recording such data. Research on some of the potential influencing factors is conflicting whilst many do not have comprehensive data on all factors. No

large-scale survey-style research of the specific utilisation of research findings has been conducted in the UK hence the interaction of factors and their relation to levels of research utilisation are yet to be explored.



## **CHAPTER 5**

### **THE STUDY**

#### **INTRODUCTION**

Previous chapters have discussed the recent emphasis on research utilisation in nursing and debated what is understood by the term research utilisation, in particular through the application of Rogers (1983) theory of innovation adoption. It has been argued that not enough is known about how to achieve research utilisation and what is known tends not to be UK based (Department of Health 1995). Furthermore, most studies conducted in the UK have been small-scale, mostly descriptive or used an action research approach, and depended upon self-reports of perceived levels of research utilisation which may be unreliable. There are no UK studies (at the time of this study) that examine the extent of research utilisation of specific research findings. It has also been demonstrated that findings of studies to date on the effect of some influencing factors are conflicting. Other studies have looked at the perceived barriers to research utilisation but fail to relate these barriers to actual research utilisation.

This study set out to examine research utilisation by nurses and to relate the utilisation of research to any potential barriers and any potential factors that might promote research utilisation.

The aim of the study and the research questions that were developed from it are set out below. The overall design of the study is then presented followed by a consideration of the ethical issues in the study. The detail of the study is then given in two parts. Firstly a definition of the variables in the first part of the study and a discussion of the development of tools to measure these variables is given. The population is then defined and details of the sampling procedure for the first part of the study then follow. The process of data collection is then described followed by an introduction to the methods used in the second part of the study.

## **AIM**

The study aimed to identify the extent of nursing research utilisation, and to identify factors influencing research utilisation by nurses in general medical and surgical wards.

The study was limited to nurses working in general medical and surgical wards in order to ensure comparability with most previous studies, to produce a large sample size and because the researcher was familiar with the clinical areas. The study was further limited to the National Health Service in Scotland to make access feasible.

## **RESEARCH QUESTIONS**

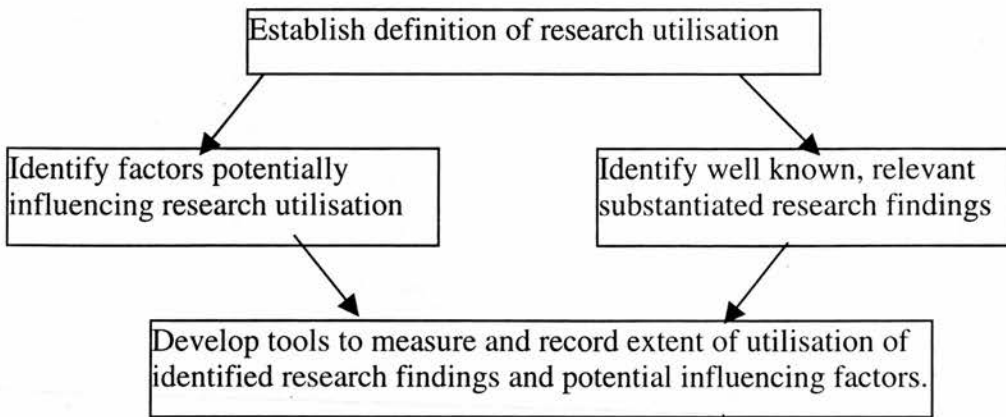
1. To what extent is nursing research utilised by nurses in general medical and surgical wards?
2. Which influencing factors are associated with a high/low level of research utilisation?
3. How do associated 'influencing' factors exert their influence on research utilisation?

## **OVERALL RESEARCH DESIGN**

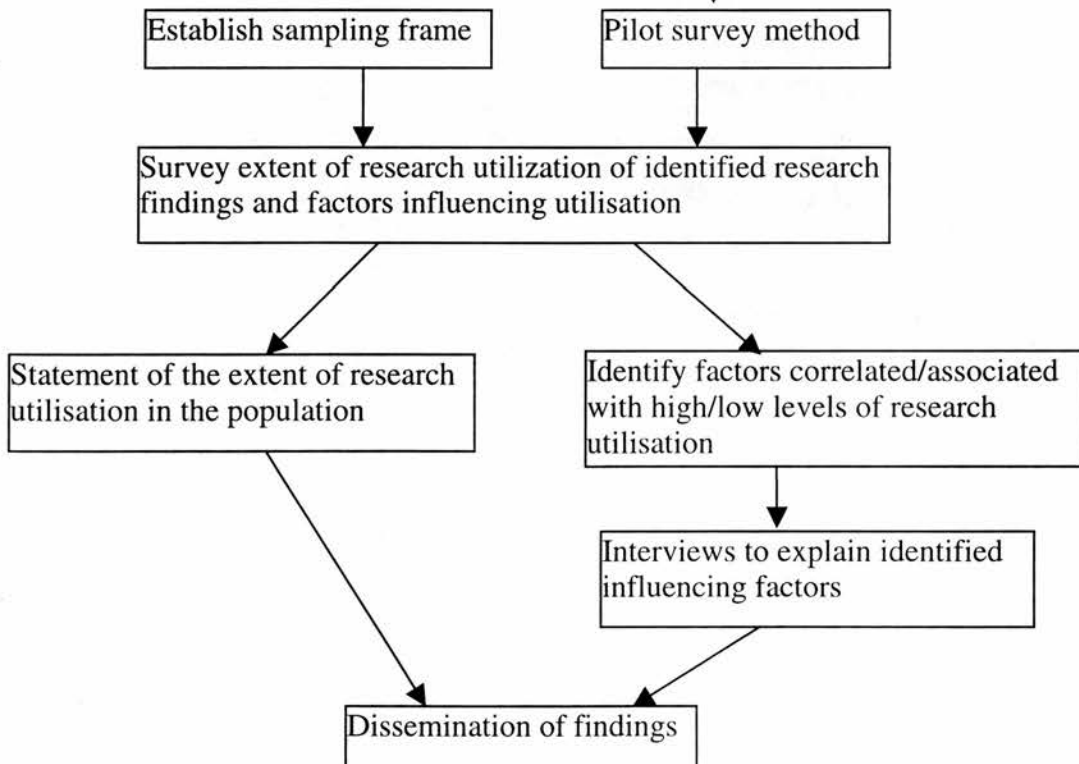
The overall research design combined a quantitative survey on the extent of research utilisation and the existence or extent of some of the influencing factors with subsequent interview data on a subsample of the survey sample to illuminate the influences on research utilisation. The design also depended upon an earlier exploratory study of research utilisation (Rodgers 1994 Appendix 1). The relationship of the exploratory study to this study is given in figure 5.1.



## EXPLORATORY STUDY



## MAIN STUDY



**Figure 5.1 Flow Chart of Research Design**

## **The extent of research utilisation**

In order to be able to generalise about the extent of research utilisation in such a large population a representative sample had to be taken. The sample also had to be large enough to make a reasonable estimate of the population's level of research utilisation from the sample (a full discussion of sample size follows later in the chapter). Whilst the most direct way of assessing research-based practice would be through observation, this raised several problems. The observer might have had a strong influence on the nurse's practice. If nurses knew they were being observed for research-based practice they might have altered their practice accordingly. Observer biases can be overcome, particularly if the observer is present in the study site for a long enough period. However, the resources required to observe a large enough sample of nurses for a long enough period in order to make a reasonable estimate of the population levels of research utilisation were out with the scope of this study.

## **Potential influencing factors**

When examining the influencing factors for any associations with research utilisation, some analysis involved comparing subgroups within the data. For example, male and female nurses' level of research utilisation, or nurses working in medical wards and those working in surgical wards. In order to make such analysis of the data by subgroups, again an adequate sample size had to be achieved in each subgroup.

It seemed, then, that a sufficiently large number of nurses, from a wide geographical area across Scotland, had to be studied. A self-report postal survey was thought to be most appropriate. Postal surveys have the advantage of being able to reach large numbers of people, are cheap and quick to administer, are easy to complete and can be anonymous. However, response rates can be low, questions may not be answered or be incompletely answered and it is not possible to clarify questions or responses with the respondents.

Surveys generally seek quantitative data, cover a large sample from a large population but, whilst largely descriptive, they may also look for relationships (correlations) and associations (through a study of comparative subgroups) in the

data sets. A survey is guided by research questions rather than hypotheses and there is no attempt to manipulate any of the variables. The survey aims to describe the situation as it is. Because of the large volume of data, it is usually handled numerically to compress and analyse the data more easily. It is possible to have open-ended questions within a survey that are then treated as qualitative data for analysis but it is more common to set out both the questions and a range of responses for each question thus allowing ease of completion and analysis. However, as the questions and the categories for responses are predetermined, this limits the way in which respondents can answer. Some questions can even be constructed to force a response for example by not offering a 'don't know' or 'no opinion answer', although the validity of this may be questionable (Barker 1991). Whilst a comparative and correlation survey design can reveal relationships between variables it is limited in attributing causality because it is not always possible to know which variable precedes another so leading to an outcome (Bryman and Cramer 1990).

It is important to define the variables for inclusion in a survey quite carefully in order to accurately describe the concept under study as respondents will be limited to responding to these items in a questionnaire. In order to protect against potential biases there also needs to be rigorous definition of the variables. An operational definition of the variables must allow for measurement, and specify both tools and instruments (Carter 1991). Valid and reliable tools must be used. This may involve using previously validated tools or developing tools from them.

A survey design then enables description of the variables under study and some statements about relationships or associations in the data. This type of study not only has its own intrinsic value in developing knowledge of the topic being studied, but may also lead on to further experimental studies which can test out any hypotheses generated.

In research utilisation in nursing there are few studies and most are North American. The validity of determining variables for this study based on only a few UK studies and other studies from a different country was uncertain. It was therefore decided to have a period of exploratory work where some of the factors that may be important in

research utilisation in nursing in the UK could be identified. Such an exploratory study would also allow for a comparison of potential variables or influencing factors identified in the literature to those identified in exploratory work.

### **How influence is exerted on research utilisation**

Whilst the survey might reveal associations between certain potential influencing factors or variables, causality cannot be assumed and the associations may be complex. There might also have been unknown intervening variables. Some associations might have been difficult to explain and require further insight and understanding than can be afforded by the researcher alone. For that reason, it was decided that a further part of the study should seek explanation and understanding of relationships and associations found in the survey data. The approach most suited to gaining meaning and to gain an understanding of the theoretical basis of an issue is qualitative methods (Williams 1998). In order to understand the views of others, interviews would seem to be more suitable than other forms of qualitative method such as observation (Waterman 1998).

A summary of the research questions and the methods used to answer them is given in table 5.1.

### **ETHICAL CONSIDERATIONS**

This study was to involve both postal questionnaires to nurses and interviews with nurses. Whilst there was no involvement of patients or patient records, the research was not controversial and there was no requirement for approval by ethics committees, there are still several ethical issues for consideration.

<b>Research question</b>	<b>Method</b>
1. To what extent is nursing research utilised by nurses in general medical and surgical wards?	Postal survey of registered nurses practising in general medical and surgical wards to self-report extent of utilisation of 14 identified research findings.
2. Which influencing factors are associated with a high/low level of research utilisation?	Identified influencing factors assessed by self-report, postal questionnaires.  Comparative and correlational analysis of the levels of research utilisation plus multi-variate analysis to identify factors positively and negatively associated with research utilisation.
3. How do associated 'influencing' factors exert their influence on research utilisation?	Interviews with a small sub-sample of clinical nurses and nurse managers to identify strongly and directly influencing factors.

**Table 5.1 The research questions and the methods used to answer them.**

This research demanded a time commitment from the nurses and their employers hence they had a right to be as fully informed about the study as possible, including the potential outcomes of the study. Nurses were fully informed about the study through an information sheet that was distributed in the hospitals prior to the questionnaires being sent out and by having a full explanation on the front sheet of the questionnaire. The questionnaire also gave an advance invitation to all nurses in the study to attend a local conference in order to find out about the findings of the study.

It was important that all individual nurses were able to consent individually to take part (or not) in the study. Whilst senior nurses may have previously agreed to nurses in their hospital being sent questionnaires, this should not construe consent on behalf of the individual nurses. Consent was assumed if the nurses returned questionnaires.

Follow up of non-respondents was by letter only and non-response after follow up was taken as refusal to consent to participate. The nurses were informed at the start of the study about the possibility of being asked to take part in interviews at a later date. In the requests for interviews the option of refusal to take part was made quite open to the respondents. Whilst not wishing to lose all candidates for interviews, some nurses might have been quite unwilling to take part in this second part of the study but be happy to complete a questionnaire. Consent to take part in the survey could not be construed as consent to take part in the interviews.

The survey asked nurses to self-report on their nursing practice in order to learn about their extent of research utilisation and to report their views on their working environment. Such information was sensitive and had to be treated confidentially. True anonymity was not possible, as respondents were known by a code number that identified them for follow up of non-response (Fink and Kosecoff 1998). Assurances of confidentiality were given in both the information sheet and on the questionnaires. The code to identify nurses and hospitals was known only to a research secretary. In the reporting of the research, care has to be taken not to inadvertently identify respondents. It might be possible for a hospital to be identified by reporting it, for example, as a large hospital in an isolated mainly rural part of South West Scotland. Care was taken to ensure confidentiality of respondents and their hospitals at all times.

Data held on individuals for research purposes must be held in accordance with the Data Protection Act (1998) and used only for its original purpose unless further consent is gained. All records were stored in line with the Act and the University of Edinburgh code of practice for storage of research records. This study collected a large amount of data that would only be used for the consented purpose, i.e. for the study of research utilisation. Respondents were assured of the use of the data in the introductory sheet on the questionnaire.



## DEFINING THE VARIABLES FOR STUDY IN THE SURVEY

A prerequisite to this study was the development of a working definition of research utilisation. This was carried out at the beginning of an earlier exploratory study (Rodgers 1994, Appendix 1) and included a literature search and a consultation exercise with nurses both in academia and clinical practice (see Chapter 2 for a discussion of definitions of research utilisation).

A search of the literature uncovered definitions ranging from the abstract to several pages describing what appeared to be more of a model for research utilisation (Horsley and Crane, 1983, Meyer & Goes 1988). However, broader definitions seemed to encompass some of the complexities of nursing research utilisation and a draft definition for the purposes of the exploratory study was then circulated to local contacts in academia and clinical practice for comment. A further draft was then sent out as part of a consultation exercise to a total of 41 academic staff, Directors of Colleges of Nursing, representatives of professional bodies, and to clinical nurses and some senior managers at a local hospital. A response rate of 73% (30/41) was achieved. Their comments were taken into account in arriving at a definition of research utilisation: -

Research utilisation is a process directed toward the transfer of research-based knowledge into nursing practice.

Research-based knowledge results from corroborated studies and, as argued by Horsley & Crane (1983) and Tierney (1991), may be utilised in various ways:

- Direct use - explanatory and predictive findings immediately applicable to practice.
- Indirect use - enlightening, extending understanding of practice.
- Methodological use - measurement scales, outcome measures or tools that may be used in practice.

## **Research utilisation**

Research utilisation had been described in previous studies as either the level of perceived utilisation of research or as the utilisation of a specific set of research findings. It was argued in Chapter 4 that perceived utilisation of research and utilisation of specific research findings must be seen as distinct concepts and that the ability of measures of perceived levels of utilisation to predict reported use of research-based practices may be limited. As a measure of actual levels of research-based nursing practice was sought, it seemed most appropriate to assess the use of specific research findings.

### *Scoring the stages of research utilisation*

Rogers (1983) model of diffusion of innovations describes the adoption of innovations in several key stages (see Chapter 2). Measuring the stage of adoption for research findings would enable description of the varying extent of utilisation of research and further understanding of the use of this model in nursing research utilisation. The methodology developed by Brett (1986, 1987, 1989) to assess the extent of research utilisation using Rogers (1983) model of diffusion of innovations was therefore adopted. This approach is based on a self-report by nurses of their use of 14 specific research findings. A range of relevant, substantiated nursing research findings that can be implemented independently by individual nurses and have been published in national nursing journals are selected. Nurses are then asked to self report on the extent to which they are aware, persuaded, use sometimes or always use these findings (See Chapter 2, pages 26-28 for discussion in relation to Rogers' model).

Scores for each stage of utilisation were assigned in the same manner as most previous studies using this methodology (see table 5.2) to enable maximum comparability of findings.

Level of utilisation	Response to question and score	Score	Cumulative score
Aware	Yes=1	1	1
	No/Unsure=0		
Persuaded	Yes=1	1	2
	No/Unsure=0		
Use sometimes	Sometimes=1	1	3
	Never/Not able to=0		
Use always	Always=2	2	4
Maximum possible score for each nursing practice and for total mean RUS on all 14 practices = 4 (Aware, persuaded and always use)			

**Table 5.2 Calculation of Research Utilisation Score (RUS)**

A maximum research utilisation score (RUS) of four and a minimum of zero were possible for each practice. A total mean research utilization score (RUS) for all 14 of the practices could be calculated for each nurse. This also had a range of zero to four. The mean RUS of all nurses for each practice could also be calculated. (Reliability of the total mean RUS is discussed on pages 115-116 of this chapter).

The Brett methodology had not been used before in the UK. Part of the exploratory study was therefore planned to develop the methodology for use in a UK context of medical and surgical nursing. This involved identifying nursing research findings that had been substantiated, were relevant to nurses in general medical and surgical wards in the UK, and had been made well known through publication in the nursing press. Nurses could then be asked about the extent of utilisation of these research findings in the main study.

#### *Identifying research findings in the exploratory study*

In the exploratory study, well-known substantiated research findings were identified through a literature review for inclusion in a questionnaire based on the Nursing

Practice Questionnaire designed by Brett (1987). Nursing research findings or practices were selected as being relevant to medical and surgical nurses in the UK, being supported by replicated and sound research, and being widely reported in a hand search of the previous ten years of the two most popular nursing journals (Nursing Times and Nursing Standard). The 17 most frequently reported research findings were initially selected. Most often, the papers reported research indirectly, drawing on research studies to inform and support the ideas presented in the papers. Few research reports were published in the time period in the popular nursing press. From these 17 practices a range was selected to represent direct, indirect and methodological utilization of research. The types of research supporting the practices were therefore varied. Some practices were supported by repeated multi-centre randomised controlled trials whilst others depended upon a smaller, but equally rigorous, group of qualitative studies. Whilst in previous studies of this kind practices have been selected that can be utilised independently by the individual, no such restriction was used here. It was felt that it was equally important to assess utilisation of practices that required some form of co-operation from colleagues. The selection of these 14 practices was supported by an independent assessment of research findings that were important for nurses working in medical and surgical wards. Nurses working in Universities and Colleges, nursing management and in professional organisations (who were asked about the definition of research utilisation reported above), were asked their views on which research findings they thought were the most important for nurses in general medical and surgical wards. The vast majority of their suggestions were replicated in the journal search. (See table 5.3 for a list of the practices. Supporting references for the practices are given in Appendix 2).

**Table 5.3 The 14 research-based nursing practices**

<b>Practice</b>	<b>Type of implementation</b>
1. "Any type of antiseptic causes damage to the tissues and is not effective in reducing contamination. In general wards, it is recommended that all wounds are cleansed with normasol or normal saline 0.9%."	Direct implementation
2. "Wounds, both granulating and sloughy, that are covered with dressings which lead to a moist and occluded environment heal faster than those that are allowed to dry out."	Direct implementation
3. "Completing a pain assessment chart enables nurses to assess a patient's pain more accurately and so provide more appropriate pain relief."	Methodological implementation
4. "Giving patients information pre-operatively about pain and pain control methods leads to a reduction in pain during the post-operative period."	Direct implementation
5. "Patients should be fasted for 4 hours in order to ensure an empty stomach prior to anaesthesia. Fasting for more than 6 hours can in itself lead to complications and discomfort."	Direct implementation
6. "Shaving leads to an increased rate of wound infection post-operatively. It is recommended that patients are not shaved or that hair is removed with clippers or depilatory cream. This leads to lower rates of wound infection post-operatively."	Direct implementation
7. "Nurses often find it difficult to communicate with dying people and few patients are satisfied with this area of care. Communication with dying patients should be recognised as one of the most important aspects of nursing care."	Indirect implementation
8. "There are several stages that dying patients may experience, for example, denial, anger. A knowledge of these can help the nurse understand a patient's behaviour and feelings."	Indirect implementation
9. "For accurate recordings of oral temperatures using a mercury thermometer, the thermometer must be placed in the sublingual pocket for a minimum of 4 minutes."	Direct implementation
10. "100% silicone catheters (rather than silicone coated or latex) are recommended for patients whose catheters are to remain in for longer than 6 weeks as they are less likely to block."	Direct implementation
11. "Maintaining a closed drainage system for urinary catheters is one of the most important steps in the prevention of urinary tract infections in patients with indwelling catheters."	Direct implementation
12. "The use of deliberative touch by nurses for therapeutic means (for example holding of hands or hugging) has been shown to promote psychological well being in some patients."	Direct/Indirect implementation
13. "In general wards, hand washing should be carried out with liquid soap or antiseptic solution rather than with a bar of soap in order to reduce the risk of cross-infection."	Direct implementation
14. "For effective patient teaching, information should be given using a planned and structured approach rather than being given opportunistically or in an unplanned way."	Direct implementation

## **Influencing Factors**

This study sought to investigate not only the extent of research utilisation but also the factors that influence research utilisation. Whilst the barriers to research utilisation were of interest, the study also sought to identify factors that supported and promoted research utilisation. Consequently, the nurses were asked to self-report the extent or existence of potential influencing factors along with their utilisation of the 14 specific research findings in the self-report questionnaire. The potential influencing factors were identified from existing studies and from the literature; and from part of the exploratory study.

### *Identifying influencing factors in the exploratory study*

Only three UK studies of research utilisation in nursing had been conducted at the time this research was being planned (Hunt 1987, Armitage 1990, Lacey 1994). Therefore, a small qualitative study of nurses in general medical and surgical wards was conducted in the exploratory study to identify factors that may be important in influencing research utilisation by nurses in general medical and surgical wards in the UK. This involved a period of fieldwork as a socially organised and contextually oriented period of participant observation. Two weeks were spent in one hospital, one of the weeks in a surgical ward, and the other week in a medical ward. (This hospital was subsequently used for pilot work in the main study and was therefore excluded from that main study.) Techniques used in the fieldwork included informal discussion, critical incident technique (Flanagan 1954) and a daily log of reflections.

During the first few days of the fieldwork in the exploratory study the research protocol was explained in more depth to the nurses; this had the advantage of prompting them to think about research utilisation before any interviews were conducted. It also allowed time for staff to become familiar with the researcher, to be reassured about the researcher's outsider status and the confidentiality of all comments and for the researcher to gain an understanding of the context.

Registered nurses working in the wards, including the Charge Nurse and the Nurse Manager of the wards, were asked to describe a positive or negative experience following a situation where research helped them or caused them problems in their



work. Some nurses found the critical incidents difficult to relate to, but most responded with examples of possible solutions for problems encountered in the wards, in part by seeking out research reports. Factors reported as influencing research utilisation were collated from informal discussions and interviews with these nurses. A total of 13 interviews were conducted. The influencing factors were then classified into emergent themes. (These themes were then used to classify the factors from the literature search to facilitate comparison.) A note was kept of the frequency with which factors were mentioned, but no attempt was made to give "weightings" to any of them. Emphasis was not put on frequency counts as the technique of analysis was not rigorous enough for this. The frequency count was not in any way intended to represent a hierarchy of importance in influencing factors reported.

A summary of some of the most frequently mentioned factors thought to influence research utilisation is presented here.

#### *Studying and reading*

Many nurses of all grades stated that they did not have enough time (both on and off duty) to go to the library to read and study. Several expressed a desire to go to libraries after work but that they were often exhausted at the end of a shift or the library hours were inconvenient.

"Literature searches are very time consuming and I am so tired by the end of the shift. Going to the library and reading should be made part of the working day."

Location of the library was also criticised as being off-site but the range of journals and the cataloguing and searching facilities were thought to be good. The limitations on study leave both in terms of days off and payment of fees were felt to restrict opportunities for development. The nurses stated that attending study days and courses was an excellent way of finding out about research findings and new ideas in nursing. Some nurses had experience of the provision of journals at ward level, which was thought to be particularly helpful.

### *Journal Articles*

Criticisms were made of the reporting of research. The poor quality of papers in the popular nursing press reporting on practice-related nursing research was one of the most frequently mentioned criticisms. However, also mentioned was that there are too many articles and journals available and that the language used in some articles was difficult to read and understand and did not give succinct summaries.

### *Organisational issues*

Bureaucracy or 'red tape' and working with many other disciplines were thought to be some of the most important hindering factors. Staff were frustrated by the perceived lack of co-operation from managers and particularly medical colleagues in thwarting their efforts to put innovations into practice. Policies and procedures were also thought to be too restrictive, but nurses also cited themselves in that they tended not to question current or traditional practices. The nurses felt that top down change was a hindrance, whilst the senior managers felt that change to research-based practice should come from the staff themselves.

Some nurses thought that management by non nurses was particularly restrictive as these managers' comprehension of a nursing perspective was thought to be poor. The nurses felt they had difficulty in making a case to these managers for changes in practice to enhance or maintain quality in a climate of cost containment. Poor staffing and a lack of continuity of staff had been experienced by some nurses as contributing to thwart their efforts at practice innovation.

"Managers can offer staff alternative solutions but cannot make decisions for them. There is increasing professional responsibility, a lot of which rests with the ward leader who needs to encourage and motivate staff."

"Managers are mainly concerned with budgets and are increasingly non nurses. They are not concerned with developing professional care, nurses need more of a professional voice."

### *The nature of research*

The nurses provided few comments on this topic but did refer to needing the implications for practice to be made clear. They reported but did not agree with the perception that research is only for medical or academic staff and is concerned with technology-oriented practice. They did however feel that this was perceived as a negative influence for some nurses.

### *Ward-based issues*

Time to reflect on practice and the creation of an open atmosphere for discussion were frequently mentioned as helping to translate research findings into practice. The nurses also felt that ward-based teaching for trained staff would help them to use research in their practise. The need for a strong Charge Nurse to lead and motivate staff was also mentioned. This appeared to be helpful not only internally within the ward but having an assertive, articulate Charge Nurse was thought to 'cushion' the ward staff from external happenings and give them good representation out with the ward. Patient-centred practice was also thought to be a positive influencing factor whereas nurses felt that in other wards the patients were seen as work units and the aim of care was to get through the work as fast as possible. This was thought to repress any ideas of creative or innovative practice. Being given the authority for practice and the ward being organised to deliver individualised patient care were thought to be important features of the type of climate where research-based practice was promoted

### *Professional issues*

The Post Registration Education and Preparation (PREP) proposals were thought to be a positive step toward research-based practise. The nurses stated that professional autonomy was important for practice innovation and that a lack of autonomy and authority were significant barriers. They also mentioned a lack of education in the basic training specifically in self-directed learning skills.

"Some staff are just doing a job, they're not really interested. You have to continually develop and not just stop when you qualify. Perhaps PREP will change things."

### *Personal beliefs and issues*

Nurses did not mention personal characteristics but rather personal beliefs and values. They felt that research findings were often disbelieved or simply discounted if they were not congruent with beliefs held by nurses. They also mentioned fear of taking risks associated with trying out new ideas. It was easy and safe to follow ritualistic practice and several respondents reported lack of faith in their own judgement. Many thought that there was a lack of motivation or energy for change which the utilisation of research findings often involves.

"People will say they believe in something, or they would like a certain type of care for themselves or one of their family but then do something very different (for a patient). There seems to be two sides of the brain, one thinks, one does."

" Staff don't like to make decisions - it's too risky. They don't want to take any chances."

The exploratory study gave rise to a wide range of potential influencing factors which are summarised in table 5.4 These findings were supported by those reported in the literature although some seemed only to receive a cursory or more oblique mention, such as autonomy and ritualistic practice. These themes and their descriptors then led to the definition of the variables or influencing factors and subsequently formed the basis of questions in the questionnaire for nurses to self-report on the extent or existence of the potential influencing factors.

<b>Theme</b>	<b>Indicative descriptor</b>
Professional issues	Education, autonomy
Studying and reading	Study leave, time reading, journals read.
Nature of research	Relevance for practice
Journal articles	Complexity, language, number
Organisational issues	Hospital size, staffing levels, perception of workload, management support, policies and procedures
Ward based issues	Leadership, organisation of patient care, collegial relationships, job satisfaction
Personal beliefs and issues	Lack of motivation, ritualistic practice

**Table 5.4 Potential influencing factors from the exploratory study**

## **DEVELOPMENT OF THE QUESTIONNAIRES**

This first part of the study involved a postal survey of ward nurses to self-report the extent of research utilisation and the existence or extent of potential influencing factors. A further questionnaire was designed for Directors of Nursing to report on the organisational factors that might influence research utilisation. Factors such as the proportion of whole time equivalent (WTE) nursing staff as trained nurses would not have been known to clinical nurses. The Charge Nurse might have known the answers to some questions but there would have been duplication of effort in seeking responses from all Charge Nurses in any one hospital on the same question, and the potential for conflicting responses. There were two questionnaires; one to Charge Nurses (CN) and Staff Nurses (SN) asking them to report on their use of research findings and the existence or extent of influencing factors concerning themselves or in the ward (see Appendix 3); and another questionnaire to Directors of Nursing asking them to report on the existence or extent of potential influencing factors in the hospital (see Appendix 4).

The front sheet of each questionnaire gave the aims of the study, explained that there were two questionnaires – one to CN/SN and one for the DN of the hospital, suggested the length of time the questionnaire would take to complete, gave reassurances of confidentiality of respondents, suggested how the findings would be used and gave a contact name, address and phone number in case of any queries. The nurses were also thanked for their anticipated co-operation and given advance notice of an invitation to attend a local conference at which the findings of the study would be presented. They were asked to return questionnaires in reply-paid envelopes within two weeks. The DN was also sent a separate information sheet about the study for distribution around the wards or at meetings to inform nurses about the study prior to the questionnaires being sent out (see Appendix 5). All these efforts were aimed at ensuring respondents were fully informed, increasing response rates and ensuring participants benefited from the study in that they had the opportunity to learn about its findings as a priority in the dissemination of the study findings.

### **CN/SN Questionnaire**

The questionnaire was divided into two parts. The first part asked nurses about their utilisation of 14 specific research findings. The second part asked nurses about the existence or extent of potential influencing factors.

In the first part of the questionnaire the approach developed by Brett (1987) based on Rogers (1983) theory of innovation adoption was used to measure the extent of research-based practice. Fourteen specific research findings were identified during the exploratory study. These research findings were termed ‘nursing practices’ in the questionnaire to nurses to enable nurses to think about the findings for use in practice rather than in an abstract way. Questions were constructed which asked nurses to report on each practice as to whether they were aware of the practice, whether they believed that the practice should be used, whether they used it sometimes or whether they used it always. The existence of a policy or procedure on a nursing practice had been suggested in the exploratory study and in the literature (see Chapter 4) as a potential influencing factor as had the source of learning about a research finding/nursing practice. Nurses were then also asked to state where they had found



out about the nursing practice and whether they knew of any policies or procedures relating to it. This set of questions relating to the 14 nursing practices was termed 'Part 1' of the questionnaire (see Appendix 3). An example of the questions for one practice is given in table 5.5 (NB. this is the final version of the questionnaire after alterations were made following a pilot study – see page 109 for discussion of the pilot study).

“Any type of antiseptic causes damage to the tissues and is not effective in reducing contamination. In general wards, it is recommended that all wounds are cleansed with normasol or normal saline 0.9%.”

1. Have you come across this recommendation?

*tick one box*

YES  1

NO  2

*If NO, please go to the next page*



UNSURE  3

*If UNSURE, please go to the next page*

2. Where did you find out about this?

*tick all that apply*

Through reading literature (such as journal articles, books, procedure manuals, circulars)	<input type="checkbox"/>
From attending a study day or conference	<input type="checkbox"/>
In training to become a registered nurse	<input type="checkbox"/>
From other sources (please specify)	<input type="checkbox"/>
Not sure where I heard about it	<input type="checkbox"/>

3. Do you believe a nurse should use this practice when cleansing wounds?

*tick one box*

Yes	<input type="checkbox"/> 1
No	<input type="checkbox"/> 2
Don't know	<input type="checkbox"/> 3

4. Do you follow this practice when cleansing wounds?

*tick one box*

Always	<input type="checkbox"/> 1
Sometimes	<input type="checkbox"/> 2
Never	<input type="checkbox"/> 3
Not able to	<input type="checkbox"/> 4

5. Are there any written policies or procedures recommending this nursing practice?

*tick one box*

Yes (Hospital policy)	<input type="checkbox"/> 1
Yes (Ward policy)	<input type="checkbox"/> 2
No	<input type="checkbox"/> 3
Don't know	<input type="checkbox"/> 4

**Table 5.5 Example of a nursing practice question from Part 1 of the questionnaire to Charge and Staff Nurses**

In the second part of the questionnaire nurses were asked about the existence or extent of potential influencing factors. The questions about influencing factors were grouped together as given below in table 5.6 and organized to ease the respondent into the questionnaire, asking for the simplest information first. A total of 57 questions were included.

CN/SN questionnaire (part II)	Question area
About your place of work	Ward speciality Type of ward Whether they were a training area for student nurses
About you	Age Gender Qualifications Clinical grade, job title Length of time in current ward Current level of job satisfaction
Studying and reading	Availability of study leave and what type Number of study days in the last 12 months and number funded Types of study days attended Ever studied nursing research and means of studying Ever taught a topic in nursing on the basis of a research study Length of time spent studying Access to a library Circulation of research summaries to wards, nursing journals in the ward Reading of nursing journals
Opinion statements	Views on research articles in nursing journals Views on the working environment

**Table 5.6 Influencing factors in the CN/SN questionnaire**

A pilot study was conducted on the CN/SN questionnaire in the hospital that had been used previously in the exploratory study. The questionnaire was piloted with 23 nurses who had not taken part in the exploratory study. Twenty nurses returned completed questionnaires. Piloting involved an assessment of the explanation of the questionnaire's aim and use, length, wording, language, layout, ease of response, anonymity, incentive (conference place), and the SAE for return of the questionnaire. Nurses were encouraged to write any comments on the questionnaires and to give

verbal feedback to a research assistant who visited all nurses who had completed and returned a questionnaire.

There was a good response rate to this pilot study (20/23, 87%), partly because a research assistant handed out the questionnaires to the nurses. Questionnaires were handed out to ensure that both Charge Nurses and Staff Nurses were involved, and to avoid asking any nurse to take part who had already been part of the exploratory study. Whilst the research assistant visited different wards to those used in the exploratory study, it was possible that nurses could have moved wards in the interim. Distributing questionnaires by hand was not possible in the main study due to time and costs of doing so. A lower response rate might then be expected when questionnaires are posted out.

Following the pilot study the wording of some questions was altered to improve the clarity of the questions, and some of the questions had the number of response sets reduced. The layout of the questionnaire was condensed to make it easier to handle and complete. Whilst the questionnaire was lengthy, the nurses did not find it too time consuming or difficult to complete as part one (on the nursing practices) followed the same format for each question.

One of the issues in the design of the study was the validity of asking respondents to self-report on their nursing practice. In the pilot study the research assistant conducted follow-up interviews with nurses who had completed the questionnaire. As the research assistant was known to the nurses, being herself a Staff Nurse in the pilot hospital, it was hoped that the nurses would be able to talk freely to her. In particular, the nurses were asked about their ability to self-report their utilisation of the 14 nursing practices openly and honestly. All nurses felt that this was possible since the questionnaire was confidential and non-threatening but asked that a response option of 'not able to' be added to the question about use of the practices. Several felt that they would like to use a practice but were constrained in doing so; hence they felt uncomfortable saying simply that they never used the practice. Whilst responses of 'not able to' were recorded for analysis, they were scored as non-use in the calculation of the RUS (see table 5.2).

## Director of Nursing Questionnaire

In this questionnaire Directors of Nursing were asked about the existence or extent of potential influencing factors in the hospital. These influencing factors were identified in the literature review and in the exploratory study, and were grouped into different sections. Directors were firstly asked whether there were any policies or procedures for each of the 14 research-based nursing practices in their hospital. These findings were then to be compared to the clinical nurses perceptions of the existence of a policy or procedure. Earlier research indicated that a perception of an existing policy or procedure might be associated with utilisation of the nursing practice but that actual existence of policy or procedure might not be associated (See Chapter 4 pages 80-81 for further discussion). The Directors were then asked about characteristics of the hospital as detailed in table 5.7 below. A total of 21 questions about the hospital were included in the final questionnaire.

Section of the DN questionnaire	Question area
Nursing Practices	Existence of hospital/ward policy or procedures on each nursing practice
About your hospital	Number of beds, Number of policies and procedures Nurse staffing levels by grade Employment of specialist nurses Research leave and conduct of research Research committees Availability of study leave and what type Access to libraries Circulation of research summaries to wards

**Table 5.7 Influencing factors in the DN questionnaire**

The questionnaire was piloted by sending it out to ten Directors of Nursing in England and to the Director of Nursing of the hospital in the exploratory study (Scottish). Other Directors of Nursing in Scotland were not used in order to avoid reducing the pool of respondents for the main study. Whilst Directors of Nursing in hospitals that did not have general medical and surgical wards could have been used the questionnaire might have been less relevant to them. Indeed, two of the nurses from England returned their questionnaires stating that they did not feel it was

appropriate for them to complete the questionnaire as they no longer had general medical and surgical wards in their hospital. Of the nine remaining Directors, six returned questionnaires.

The Directors of Nursing were asked to make comment on the questionnaires where appropriate because no follow up interviews were to be conducted with this group due to the geographical spread of respondents. After reviewing their comments and any misunderstandings on the questionnaires, the section that asked about staffing levels and types of nurses employed was revised. Some of the same information could be calculated from fewer questions and some questions were ambiguous. Some figures and data on staffing levels in particular were more readily available to Directors in certain forms. The Director of Nursing in the hospital from the exploratory study then reviewed this revised version to ensure that it was clear and easy to complete.

### **Validity and Reliability of the Questionnaires**

However variables are measured and recorded, the tool must measure what it claims to measure and do so reliably. The validity of the tools is discussed first and the reliability secondly.

Content validity was thought to be particularly strong for the two questionnaires because substantive work in the exploratory study, along with the literature review, had identified a wide range of variables that might potentially influence research utilisation. The range of the 14 identified research findings had also been assessed as substantiated, widely publicised, relevant to medical and surgical nurses in the exploratory study and they were thought to be important findings for nursing practice by a range of nurses. The questionnaires were further assessed for content validity by a number of local nurse researchers and lecturers. They agreed that the questionnaire seemed to be comprehensive in measuring the specific utilisation of the 14 research findings and in measuring a wide range of variables that may potentially influence research utilisation. The questionnaires were therefore thought to adequately cover the assessment of research utilisation and the potential influencing factors.



Construct validity could not be measured for the questionnaires through 'known group technique' as no 'known group' of nurses who had high research utilisation could be identified (Polit and Hungler 1995). No other methods of measuring research utilisation of specific practices had been developed so convergence on the construct between methods of measurement could not be made. However, construct validity was thought to be strong for the questionnaires. A definition of research utilisation had been specified and was used to drive the development of the tool to measure utilisation of specific research findings. Rogers (1983) theory of innovation adoption underpinned the description of the stages of research utilisation. A literature search and consultation exercise in the exploratory study led to the identification of the 14 research findings to be used in the tool, whilst the period of fieldwork along with another literature search led to the identification of the potential influencing factors. Variables were described as closely as possible to the way they were explained by nurses in the exploratory study whilst ensuring questions were not ambiguous. The use of self-report on utilisation behaviour was validated through follow up interviews in the pilot study. In these interviews nurses said they felt that because the questionnaire was non-threatening and confidential they were able to answer honestly about the utilisation of the research findings once a further response option was added for one question. However, whilst every attempt was made for nurses to be open and honest with the interviewer through conducting private discussions and the interviewer having a similar known status to those being interviewed, it is still possible that nurses responded in socially desirable ways or perceive themselves to behave somewhat differently to the way they actually did behave.

As there were no studies of the utilisation of specified research findings in the UK at the time and so no measures of it developed, no criterion validity could be established.

The reliability or the consistency of a measure is important, since a tool that is not reliable cannot be valid. If a tool measures something inconsistently or inaccurately, then it is not a valid measure of that concept. Several forms of reliability were addressed in this study.

Stability of the CN/SN questionnaire, or the extent to which the same results are obtained on a separate occasion, was assessed by measuring test re-test reliability. Eight of the 20 nurses who had completed the CN/SN questionnaire in the pilot study agreed to fill in an identical questionnaire two weeks later. This time period should have been sufficient for them to have forgotten their original responses to the questionnaire but not long enough for them to have had any significant change in research utilisation or their perceptions of the existence or extent of influencing factors. However, despite repeated reminders and a visit from the research assistant, only three nurses completed repeat questionnaires. Reliability co-efficients were therefore not calculated for the data due to small number of respondents.

In part one of the questionnaire, several of the nursing practices that had been marked as 'not aware of' in the first questionnaire were marked as having been heard about or as 'not sure' whether they had heard about it. This is not surprising as nurses would have learned about the practices through the first questionnaire. There were occasional shifts between always using a practice and sometimes using a practice between the two questionnaires (4/31 responses about practices used always or sometimes). A few responses about whether a policy existed for a practice were also different in the two questionnaires (6/31). Such differences were thought to be minor and the vast majority of responses to the five questions on each of the 14 practices were consistent.

In part two of the questionnaire there was some confusion about one of the 'cafeteria' type of questions (question 13) because responses available for ticking were not mutually exclusive. This was considered a questionnaire design fault that was altered for the final version of the questionnaire to ensure a higher reliability. There were also some changes in the answers of the nurses to the questions that used a 'Likert-type' scale for response. Nine out of 78 responses were inconsistent but these were changes in the strength of agreement or disagreement rather than changes in agreement or disagreement. However, another 9 responses out of the 78 in total, had changed between 'tend to agree' and 'tend to disagree'. When discussed with the nurses, it appeared that they had little opinion about a few of the questions yet they were being forced to state either agreement or disagreement with the statement. The

forced choice version of the 'Likert-type' scale had originally been chosen to avoid the complexities of interpreting the middle response of 'neither agree or disagree' or 'uncertain' (Burns and Grove 1997, Oppenheim 1992). Yet use of the forced choice seemed to lead to unreliable responses. Therefore a five-point scale with a response of 'uncertain' as a middle value was used in the final version of the questionnaire with the aim of improving reliability. The test re-test reliability of the CN/SN questionnaire was thought to be adequate with the amendments made to the final version of the questionnaire as described above.

The DN questionnaire was not subject to any stability testing since such a small number (6/11) of Directors of Nursing had returned the questionnaire in the pilot study that it seemed unlikely there would be a good response to a request for a repeat questionnaire.

Another form of reliability is internal consistency, which is a measure of the extent to which a scale or sub-scale is homogeneous. When internal consistency is high, this indicates that all the items in the scale vary in the same way; hence the items in the scale are arguably measuring the same characteristic (Polit and Hungler 1995, Carter and Porter 2000). Split-half techniques are one way of assessing internal consistency but they fail to take account of all the different ways of splitting a sample. Cronbach's alpha is a statistic that takes account of every possible way of dividing a sample and gives a reliability co-efficient from 0 to +1.00. In this study, the research utilisation scores from each of the 14 practices were to be summed and a mean value used in analysis. It was therefore important to assess the internal consistency of this value.

In the pilot study, the internal consistency of the total mean RUS across all of the 14 practices was only 0.6032 (Cronbach's alpha)  $n=20$ . This is perhaps not surprising in that the 14 practices were deliberately chosen to be diverse and represent all three forms of utilization (direct, indirect and methodological) and be across a range of clinical topics. The pilot study had also been conducted with a variety of grades of nurses and, as such, was not a homogeneous sample. There may have been variations in the data simply due to the variety of respondents (Polit and Hungler 1997). It

would have been possible to increase the internal consistency of the total mean RUS by removing one or more of the practices. For example removing practice nine – a particularly low scoring practice - increased internal consistency to 0.6433. However, the tool might have been less able to discriminate between nurses with high and those with low levels of research utilisation if it becomes too homogeneous. It was therefore decided to retain all 14 practices in the calculation of the total mean RUS as an overall measure of research utilisation. Whilst the internal consistency is not high (0.6032) Polit and Hungler (1995) state that co-efficients of 0.6 and above are sufficient if only intergroup comparisons are to be made in the data; a much higher internal consistency is required when judgements about individuals are to be made on the basis of a scale score.

In conclusion, a tool that measures research utilisation in medical and surgical nurses in the UK and the existence or extent of potential influencing factors with adequate reliability and validity was developed for use in the survey.

## **POPULATION AND SAMPLING**

The study set out to investigate research utilisation by nurses in general medical and surgical wards in the National Health Service in Scotland (NHSiS).

### **Population**

All general medical and surgical wards in the NHSiS are within hospitals, data on which are held by the Central Statistics Agency (CSA). The data on hospitals and wards are published each year in the Health Services Yearbook. However what constitutes a general medical and a general surgical ward is open to interpretation. Most wards in larger hospitals now tend to be organised according to medical speciality so perhaps it is more a question of which specialities are considered to be very different from a group of other specialities. What was important for this study was to be able to define the population in order to be clear about where the sample was to be taken from and, therefore, where the results would be generalisable. It was

important that comparable samples were taken from each of the hospitals so that findings could be compared between them.

One definition of what constitutes a general medical or surgical ward (in Scotland) is that used by the agency in Scotland that collects all statistical data on the Health Services (CSA). The definition of general medical and surgical wards used in this study is therefore the same as that used to describe hospitals and wards as reported in the Health Services Yearbook of 1994 (Howland 1994). The criteria are given below in table 5.8.

	<b>General Medical</b>	<b>General Surgical</b>
<b>Includes</b>	Cardiology Metabolic Diseases Gastro-Enterology Poisons Nephrology Rheumatology Genito-Urinary Medicine Medical Oncology Haematology Homeopathy	Gastrointestinal Surgery Vascular Surgery Renal Surgery Endocrine Surgery Day Surgery in any of these categories
<b>Excludes</b>	Dermatology Rehabilitation Medicine Respiratory Medicine Oral Medicine Neuromedicine Communicable Diseases Intensive Therapy and Coronary Care Spinal Wards Gynaecological Medicine Paediatric Medicine General Practice Radiotherapy	Orthopaedics ENT Urology Gynaecology Ophthalmology Orthodontics Oral Surgery Neurosurgery Plastic Surgery Cardiothoracic Surgery Paediatric Surgery Transplant Surgery

**Table 5.8 Criteria for defining general medical and surgical wards.**

It is possible that some wards may contain a mixture of the specialities, for example a ward may take both Gastrointestinal Surgery patients and patients for Oral Surgery.

In this study, the ward was designated to be in the population when any of their beds incorporated specialities in the inclusion criteria. Similarly there may be some wards that have both general medical and surgical beds. In this case, the wards would again be included as the patient care is within the inclusion criteria. These wards would be described as mostly medical, mostly surgical or mixed (both medical and surgical) in the study.

Which nurses within the medical and surgical wards constituted the population was an issue to be decided. This study was concerned with views of qualified nurses only, because they were the ones making decisions about nursing care. The study therefore excluded student nurses and care assistants/nursing auxiliaries. Registered nurses (RNs) at both first and second level were included since both make decisions about nursing care in the wards (these RNs will be referred to simply as nurses in most of the following discussion).

Whether utilisation of the 14 practices would be relevant to nurses on permanent night duty was discussed with the ward nurses during the pilot testing of the questionnaires. They felt that care such as dressings or planning patient teaching was done so infrequently on night duty that many of the practices would not be relevant to nurses on permanent night duty. Whilst some of the practices were very relevant to those on night duty, such as pre-operative fasting and use of deliberative touch, on balance it was felt that there were perhaps too many practices that night nurses may see as not entirely relevant to their practice. Nurses on permanent night duty were therefore excluded from the study. It should be noted, however, that at the time of the study many RNs were on internal rotation and that the proportion of RNs on permanent night duty had decreased considerably in comparison to previous years.

It was also decided to exclude temporary nurses from the study because they may not be specialising in general medical or surgical nursing and may be quite transient to the ward and even to the hospital. However some nurses may be on temporary, short-term contracts but assigned permanently to a ward, for example nurses employed to cover maternity leave. As these nurses on short-term contracts were consistently part of the ward team and would be expected to take part in all aspects of the work of the



ward, they were included in the study. Nurses on long-term leave were excluded because the questionnaires were to be sent to the wards; these nurses would be more likely to have their questionnaires lost and not reach them. A high level of non-response from one particular subgroup of the sample could bias the findings. A summary of the exclusion and inclusion criteria for nurses is given below in table 5.9.

<b>Includes</b>	<b>Excludes</b>
Day duty or internal rotation nurses 1 <sup>st</sup> level registered nurses 2 <sup>nd</sup> level registered nurses Nurses with permanent contracts Nurses with short-term contracts	Nurses on permanent night duty Nursing auxiliaries Care assistants Student nurses Temporary nurses Nurses on long-term leave

**Table 5.9 Summary of the exclusion and inclusion criteria for nurses.**

### **Sample size for the survey**

Once the population had been defined, a way of taking a random sample of it had to be determined, because the population was considered too large to survey due to the resource constraints of the study. The size of the sample required, firstly to make a reasonably accurate estimate of the extent of research utilisation in the population, and secondly to avoid a type II error when analysing the associations between influencing factors and research utilisation, also had to be considered.

An adequate sample size was required to minimise the standard error of the mean (SE) in order to make a reasonable estimate of the mean research utilisation score (RUS) of the population. As some analysis and description of the data was to be conducted by strata, minimum sample sizes for the subgroups determined the overall sample size. Fowler (1993) argues that whilst the precision of the sample increases steadily up to 150 to 200 cases there are only modest gains beyond that point. Earlier studies (as discussed in Chapter 4) had indicated that size of the hospital might affect research utilisation. In these studies hospitals had been grouped into large (>500

beds) medium (250-500 beds) and small (<250 beds). The same size groupings were then used in this study as they seemed to adequately describe subjective notions of size and to enable comparability of results to previous studies. A response from a minimum of 200 nurses in each hospital size group was therefore aimed for. This led to a greater proportion of small and medium sized hospitals being sampled initially in order to reach the target.

Some analysis was to involve comparison of subgroup research utilisation scores and looking for correlations between research utilisation scores and other variables in order to examine any associations of the influencing factors with research utilisation. Inferential statistics in a sample enable a null hypothesis to be rejected or accepted on the basis of how probable the observed differences are in the population. However, if the differences in the population are small, then there is a risk that hypotheses will not be confirmed, even when correct, if the sample size is too small. In most new areas of research, differences can often be small (Cohen 1977) and therefore the risk of a type II error high. In order to minimise the risk of this error, power analysis can be used to estimate the sample size required to detect differences at a known level.

In this study, power analysis (power = 0.8 and alpha = 0.05) was based on previous studies using a similar methodology (Brett 1986, Coyle and Sokop 1990, Varcoe and Hilton 1995). These studies reported effect sizes of around 0.3 for independent t-tests indicating a sample size requirement of 174 per group (Polit 1996). For analysis of variance with three groups (as anticipated for example with the three different sizes of hospitals), a small  $\eta^2$  of around 0.03 seemed likely from the results of the previous studies, suggesting a sample size of 105 per group (Polit 1996). Correlation co-efficients in the region of 0.2 were anticipated, requiring a minimum of 197 per group (Polit 1996).

### **Sampling for the survey**

In order to overcome the difficulties associated with drawing up a sampling frame for this population of nurses, cluster or multi-stage sampling was used. In multistage sampling, a geographical area, site or convenient grouping such as a hospital is first selected and a sampling frame of nurses within that area then drawn up. This

approach is advantageous in reducing the time and costs of sampling because the number of sites where a sampling frame needs to be drawn up is reduced, but it does increase the standard error. An optimum balance between the number of clusters and the number of cases from each cluster needs to be struck in order to maintain precision (Gilbert 1993). As elements within a cluster tend to be similar, a sufficient number of clusters need to be drawn to represent the population. The number of stages used should be minimised in order to keep standard error as low as possible. Where possible, the clusters should be of equal size to avoid over-representing cases from large clusters or under-representing those from smaller ones. To counteract the loss of precision due to clustering, Gilbert (1993) recommends that as much stratification as possible be included. When dealing with the smaller number of cases that results from multi-stage sampling, stratification becomes important so will often need to be combined with cluster sampling (Donner 1992).

In order to be able to reduce sample size whilst maintaining or even increasing the precision (the extent to which the sample estimates the population) of the sample, stratification can be used (Whittemore and Halpern 1997). Stratification leads to an increased precision and a decreased standard error as most variance occurs between strata or groups with the groups being relatively homogeneous and representativeness of the population more likely. The population is divided into groups which have characteristics thought to be associated with the variable under study – in this case hospital size as described previously. A random or probability sample is then drawn from each group. This was an important design feature as there were comparatively small numbers of nurses working in small hospitals who may have been under- or over-represented by random sampling.

It was important to the research design to increase the number of cases in certain groups to give sufficient numbers for an intergroup comparison. If numbers of cases were increased proportionally across all the groups there may be unnecessarily large numbers of cases in some groups and just enough in others. Disproportionate sampling can be conducted to increase the probability of nurses from one group being selected, but this then requires a weighting calculation when looking back at the whole sample to account for a certain group of nurses being over-represented.

However, the probability of this is known so calculations are possible. In this study there was to be disproportionate sampling of nurses from small hospitals and of the Charge Nurses as opposed to all other RNs. The Charge Nurse from each ward was to be surveyed, firstly to give a sufficiently large number of Charge Nurses for their research utilisation scores (RUS) to be analysed comparatively as a subgroup, and secondly to enable comparison of RN research utilisation scores with that of their Charge Nurse. Weighting calculations by ward and hospital would then be required as part of the analysis to give an estimate of total mean RUS of the population.

#### *Multistage sampling - stage 1*

All NHS hospitals in Scotland with general medical and/or general surgical beds were identified (according to criteria given in the Health Services Yearbook, Howland 1994) and grouped by size according to bed numbers as described above. A total of 55 hospitals were identified but, on checking with the hospitals, three no longer had general medical and surgical beds, and two were due to close shortly. These five hospitals were therefore removed from the population. A total of 50 hospitals remained that had general medical and surgical beds according to the criteria. However, the one large hospital that had been used in the exploratory and pilot studies was excluded, giving a total of 49 hospitals from which a sample was to be drawn. A random sample of between 50% and 70% of hospitals by size grouping was taken to ensure sufficient numbers of nurses for subgroup analysis (table 5.10).

#### *Access to the sample*

The Director of Nursing from each sampled hospital was sent a letter explaining the nature of the study and the extent of participation required, and seeking their consent to take part. Twenty-five Directors of Nursing agreed to take part in the study but one large and three small hospitals declined to take part. These four Directors of Nursing felt that the workload of their nurses in terms of involvement on other projects meant they could not participate. Furthermore, the Director of Nursing of the large hospital replied that they were rewriting their policy manual and gave this as another reason for not being able to take part. It is possible that those hospitals that declined to take part were different to those who did agree to take part.

<b>HOSPITAL SIZE</b>	<b>Large (&gt; 500 beds)</b>	<b>Medium (250-500 beds)</b>	<b>Small (&lt;250 beds)</b>	<b>Total</b>
Total number of hospitals with general medical and surgical beds	17 (+1*)	10	22	49 (50*)
<b>1st stage sampling</b>	8	6	15	29
Number of hospitals in random sample (% total in size group)	(47%)	(60%)	(68%)	(59%)
No of hospitals in random sample agreeing to take part (% total in size group)	7 (41%)	6 (60%)	12 (56%)	25 (51%)
Total number of nurses in sample frame	827	521	404	1752
<b>2nd stage sampling</b>				
50% or minimum of 5 RNs in each sample ward including the Charge Nurse for each ward (Final % of nurses sampled from each ward)	453 (55%)	268 (51%)	215 (54%)	936 (53%)

\* One large hospital used in the pilot study was excluded from the main study.

**Table 5.10. Multistage stratified sampling and response rates by hospital size**

In particular, it may be that these hospitals viewed research less favourably but the main reason all gave for non-participation was involvement with other studies. The non-participation by these hospitals remains a potential minor source of error in estimating the total mean RUS of the population. As only three out of 49 hospitals declined to be included in the study, partly because of existing commitments to research, this was not thought to limit the generalisability of the results.

#### *Multistage sampling - stage 2*

Each hospital that had been sampled in stage 1 for inclusion in the study was asked to provide a list of RNs in each general medical and surgical ward. A duty rota was often the most convenient way to do this, but it often required telephone calls to

check whether nurses on the list met the inclusion criteria. Once a list of all eligible RNs on each ward had been drawn up, a random sample of at least 50% or a minimum of five RNs per ward was then taken. The sample was stratified to include the Charge Nurse for each ward. The Charge Nurse was counted as one of the 50% or minimum of five RNs per ward. This resulted in a total sample of 936 nurses in 25 hospitals throughout Scotland, which represents approximately 25% of the total population of RNs in medical and surgical wards.

The sample size for small hospitals was lower than planned since three small hospitals had refused to participate in the study. The study aimed to elicit a minimum of 200 respondents in each hospital size group in order to be able to make a reasonable estimate of the total mean RUS by hospital size group. (Comparison of the total mean RUS between the three hospital size groups only required a minimum of 105 cases.) It was unlikely from a sample of 215 nurses that 200 would return questionnaires. However, the pilot study suggested a good response rate to the questionnaire. Following consultation with colleagues in the Nursing Research Unit at the University of Edinburgh who had recent experience of this type of questionnaire to nurses, a response rate of 65-75% was anticipated. This would mean a response from between 140 and 160 nurses in small hospitals. As Fowler (1993) indicates a limited gain of precision beyond around 150 cases, the sample size was thought to be sufficient.

Sampling for the interviews is discussed in the section on 'Interviews' below in order to maintain a logical progression in the presentation of the progress of the study.

## **DATA COLLECTION**

An information sheet about the project printed on headed paper was sent out to each hospital in the sample for distribution to the ward nurses to inform them about the impending study (see Appendix 5). The information sheet was sent out two weeks before the questionnaire so that it could be included in 'Team briefings', unit and ward meetings, and posted on ward notice boards.



Each hospital supplied a list of names of RNs in the medical and surgical wards (usually in the form of a duty rota) so that questionnaires could be mailed directly to named participants in the ward. The questionnaires were mailed out with their reply-paid envelopes to the ward nurses and their Directors of Nursing. Non-respondents were sent a reminder letter three weeks later and a further reminder letter with a repeat questionnaire if they still failed to respond after another four weeks.

## **INTERVIEWS**

As a survey approach cannot always clearly establish cause and effect relationships amongst the data but only relationships between variables, a further part of the study was planned to investigate any relationships identified between research utilisation and influencing factors. This was in part, to explain the way in which the influencing factor affects research utilisation and if this is direct or through any intervening variable not identified for study in the survey. The most appropriate way to answer this question was thought to be through structured interviews with nurses.

Interviews were proposed in order to gain an understanding of how some of the factors significantly associated with research utilisation as identified in the survey might exert an influence on nurses' ability to utilise research. The results of the questionnaire data would enable significant differences in RUS between subgroups of nurses and the significant correlation of some variables with RUS to be identified. The relationships may appear to be straightforward to explain in some cases yet other relationships may have no immediately apparent explanation. In the interviews, the aim was to elicit the nurses' own explanations of the relationships between significant factors identified and the use of research findings. Nurses would be asked to give their explanations of the effects of an influencing factor from their own personal points of view. They would also be asked to comment on the effects of the identified influencing factors in their own ward and hospital. It would be possible for the researcher to suggest or hypothesise explanations and ask the nurses to verify or

refute them. However, this would limit the explanations available to those proposed by the researcher and may neglect the insights available to the nurses.

The structure and content of the interviews could not be finalised until the results of the survey were known. Further detail on the conduct of the interviews is given in Chapter 6.

### **Selection of Nurses for Interview**

The nurses to be selected for interviews were a variety of high and low scoring nurses to give a range of perspectives. Nurses would be selected as those who had a high and those who had a low total mean RUS as an insight on factors associated with high and low levels of research utilisation was sought. Explanation was looked for at the level of the individual, as well as at ward and hospital level. Therefore nurses were to be selected who had individually high/low scores, but who were also part of high/low scoring wards and high/low scoring hospitals. The views of the Director of Nursing for the hospitals would also be sought in terms of how they perceived that they enabled research utilisation by nurses.

It was anticipated that somewhere in the region of 20 to 30 interviews would be conducted in total in order to gain representation from high and low scoring nurses, both Staff Nurses and Charge Nurses, and from the Directors of Nursing in the hospitals from which the SN/CN sub-sample was taken. The detail of selecting nurses for interviews could not be finalised until after analysis of the survey data had been completed. Further detail on the selection of nurses for interviews is given in Chapter 6.

### **LIMITATIONS OF THE STUDY**

The approach used in the survey does not rely on nurses distinguishing between research-based and non-research-based practices but still has the limitations of being a self-report of practice. However, an attempt was made to demonstrate the validity of the self-reporting of research utilisation.

The tool (based on the work of Brett (1987, 1989)) designed to measure the level of research utilisation has been used quite uncritically by several authors (Berggren 1996, Rutledge et al 1996, Varcoe and Hilton 1995). However the tool does have several limitations (see also page 28). The scoring system does not differentiate between not being able to use a practice and not wishing to use a practice. The tool makes no distinction between those nurses who may be utilising practices simply because other nurses in the ward use it and those nurses who have actively sought out research-based information about the practice, considered the merits of it, become persuaded of its value and consciously implemented it into practice. The tool may be less sensitive to the measurement of indirectly utilized research where it could be difficult to define exactly how the research impinges on patient care. However, it is useful to test out the development of the tool in this way and nurses in the pilot study did not have any difficulty responding to the questionnaire on practices that were indirectly utilised.

The tool attempts to differentiate between nurses who sometimes use a practice and those who always use a practice. However nurses may have given a response of 'sometimes use' simply because they required to use a practice infrequently in their practice rather than to indicate that they used a practice some of the time when it would have been possible to use it. Furthermore, nurses may have had good reason for only using a practice selectively for example deliberative touch. There may have been occasions when a nurse decided it was inappropriate to use this intervention and so respond as using deliberative touch only sometimes.

The interpretation of the total mean score can be difficult (see page 146) as the interpretation of what range of scores represents which stage of utilisation is open to debate. Similarly the meaning of the total mean score is open to interpretation. There is no standard against which to judge the level of utilisation apart from comparison to a small number of other studies. What one author may interpret as a satisfactory level of research utilisation, another may interpret as either high or low. There is no consensus as to what the expected level of research utilisation should or might be.

This study did not attempt to assess the impact of research utilisation on patient outcomes. There is an implicit assumption in research utilisation, that if practice is based upon relevant, sound and replicated research studies, patient benefit will accrue. However, it is acknowledged that this is purely an assumption.

The findings of the study may be generalised only to nurses in medical and surgical wards. A further limitation is that there were only a very small proportion of registered nurses in the study who had qualified under the new training system (Project 2000) because the new training was implemented somewhat later in Scotland than in other parts of the UK. A comparison between these nurses and those trained previously was not therefore feasible.

The 14 practices in this study cover a wide range of topics but reflect only a very limited part of nursing work. It was not feasible to extend the number of practices in the questionnaire any further as this would have made it too lengthy for respondents. The length of the questionnaire and its format may have provoked response sets. Whilst some practices might be thought to be more relevant to surgical nurses than medical, nurses in medical wards still need to be knowledgeable of all of the practices. For example, knowledge of pre-operative fasting times would be required as they may have patients who undergo tests or investigations under sedation or anaesthetic which requires a fasting period beforehand.

The interviews were conducted with a purposive sample of respondents and as such, give a wide representation of views. Whilst these views are only strictly generalisable to the nurses interviewed, the concepts emerging from the analysis are enlightening in understanding research utilisation by nurses in other general medical and surgical wards in the UK.

## **CONCLUSION**

This chapter has discussed the aims of the study and the resultant research questions followed by an account of the methods used to answer those questions. Whilst the approach uses a combination of methods, these build on and complement each other in the course of the study.

## **CHAPTER 6**

### **RESULTS**

The findings of the study are presented in terms of how they answer the research questions. Firstly, the findings of the survey are reported. The response rates to the survey are presented followed by a description of the respondents. The ascertained extent of nursing research utilisation is then reported, after which the associations and relationships found between research utilisation and the influencing factors are discussed. Finally, the conduct and findings of the interviews are presented.

#### **ANALYSIS OF THE SURVEY DATA**

The survey data was coded and inputted to a statistical computer package by a secretary and checked by a research assistant. The author did a further random check on data coding and inputting. Most data analysis was conducted using Statview SE+Graphics (v1.04) for Macintosh with some other parts of the analysis being conducted in Systat (v5.2.1) for Macintosh and SPSS (v4.0) for Macintosh and SPSS (v8.0) for windows. Non-response to questions was coded as missing data and was excluded from the analysis. When there were large amounts of missing data, in particular in the multivariate analysis, the variables were excluded from the analysis. Missing data in factor analysis was handled by list-wise deletion.

#### **RESPONSE RATES TO THE SURVEY**

A total of 936 Charge and Staff Nurses were sent questionnaires. Seven hundred and two questionnaires were returned in all, of which 53% responded initially, 23% were returned following a reminder letter and 24% following a second reminder letter with a repeat questionnaire. The 702 questionnaires returned was a response rate of 75%, which was at the top end of the response rate estimated. However, 16 of these

questionnaires had missing data on more than three practices and so were excluded from the analysis. The respondents had removed the code numbers on a further six questionnaires so they too were removed as they could not be identified with a hospital in the analysis. A final response rate of 73% was then achieved with useable responses from 680 nurses. This response rate was thought to be highly satisfactory for a postal survey and was achieved despite the length of the questionnaire (14 pages). The response rates by hospital size are given in table 6.1 below.

<i>Hospital size</i>	<i>Large</i> ( <i>&gt; 500</i> <i>beds</i> )	<i>Medium</i> ( <i>250-</i> <i>500</i> <i>beds</i> )	<i>Small</i> ( <i>&lt;250</i> <i>beds</i> )	<i>Total</i>
<b>2nd stage sampling</b> 50% or min. of 5 RNs in each sample ward incl. Charge Nurse for each ward	453	268	215	936
Number responding (% responding)	312 (69%)	210 (78%)	158 (73%)	680 (73%)

**Table 6.1 Response rates by hospital size**

The target of 200 responses from nurses in each size of hospital was not achieved in the small hospitals because of the refusal to participate by three of the hospitals. However, it has been argued that a minimum of 150 nurses would be acceptable and this was achieved due to the high response rate.

When the proportion of respondents to non-respondents in each hospital size, hospital location and type of hospital were compared, they were proportionally distributed (table 6.2). Non-respondents could not be characterised in any other way. Those responding therefore were a good representation of those sampled on the above characteristics.



Variable	% of column (No.)	HOSPITAL			NURSES	
		Population	Sampled	Responding	Sampled	Responding
Size	Small	44% (22)	48% (12)	45% (9)	23% (215)	23% (158)
	Medium	20% (10)	24% (6)	30% (6)	29% (268)	31% (210)
	Large	36% (18*)	28% (7)	25% (5)	48% (453)	46% (312)
Location	Rural	48% (24)	48% (12)	50% (10)	22% (200)	22% (149)
	Suburban	40% (20)	48% (12)	45% (9)	62% (583)	61% (414)
	Urban	12% (6)	4% (1)	5% (1)	16% (153)	17% (117)
Type	Teaching	34% (17)	32% (8)	30% (6)	45% (425)	51% (349)
	Non-teaching	66% (33)	68% (17)	70% (14)	55% (511)	49% (331)
	Total	100% (50*)	100% (25)	100% (20)	100% (936)	100% (680)

\*includes one large hospital used in the pilot study which was excluded from the main study.

**Table 6.2 Comparing representation of respondents to the hospital population and those sampled**

The Charge and Staff Nurses in the survey came from a total of 25 hospitals. The Director of Nursing of each of these 25 hospitals was therefore sent a questionnaire

to report on some of the organisational factors that might influence research utilisation. Twenty of the 25 Directors of Nursing (DN) returned questionnaires giving a response rate of 80%. Two reminders were sent to non-respondents, the final one with a repeat questionnaire. Whilst a 100% response might have been unrealistic, there were then five hospitals that failed to provide information on the hospital level variables. This meant that nurses from the five hospitals where no DN questionnaire was returned had missing data on 21 variables at an organisational level.

When the proportion of non-respondents (DN) in each hospital size, hospital location and type of hospital were compared, they were proportionally distributed (see table 6.2). Non-respondents could not be characterised in any other way.

## **CHARACTERISTICS OF RESPONDENTS**

### **Place of Work**

At the time of the study there were 15 Health Boards in Scotland and each was represented in the study by at least one hospital. However, this was by chance of the random sampling rather than design. Each hospital was classed as being in a rural, suburban or urban area or locality according to population density statistics by postcode. These criteria and figures were supplied by the Central Statistics Agency of the National Health Service in Scotland and are based on the annual report of the General Register Office for Scotland (1994). As shown in table 6.2, most of the nurses came from hospitals in suburban areas (61%/414). Nurses came almost equally from teaching hospitals and non-teaching hospitals although a greater proportion of nurses were from large hospitals than medium and small ones.

Further data on hospitals in which the nurses worked were available from the questionnaires sent to the Director of Nursing. The size, location and type of hospital of those responding to this questionnaire are shown in table 6.2. The majority of hospitals employed full time nurses in quality assurance (77%/14) but only 21% (3) employed nurses full time in nursing research. Forty-five percent of hospitals (9)

gave either full or part time leave to nurses to do research, with 63% (12) reporting nursing research being carried out in their hospital in the previous 12 months. Data on the nurse staffing levels in the hospitals was collected and is summarised in table 6.3.

<b>Variable</b>	<b>mean</b>	<b>n</b>	<b>SD</b>	<b>Range</b>
No. of WTE* nurses	453.61	19	399.53	20.64 - 1219
No. of trained nurses	312.94	18	264.65	14.99 - 816
No. of 1st level nurses	251.95	19	225.24	11.75 - 715
% trained nurses	70.72	18	9.81	50 - 87
% 1st level nurses	54.98	19	9.86	31.66 - 69.44
No. of WTE* nurses /bed	1.26	19	0.4	0.8 - 2.18
No. of trained nurses /bed	0.88	18	0.28	0.51 - 1.41
No. of 1st level nurses /bed	0.69	19	0.23	0.38 - 1.18

\* WTE = Whole time equivalent

**Table 6.3 Hospital staffing levels**

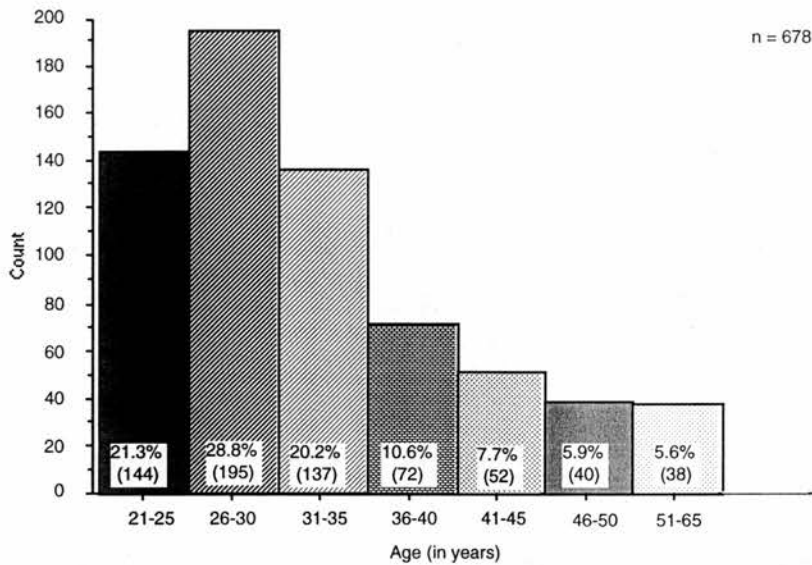
Considerable variations in the numbers of nurses, types of nurses and the numbers of nurses per hospital bed were found.

Further descriptive information on all the data from the Director of Nursing questionnaire is available in Appendix 6.

Almost all the nurses (92%/ 621) worked in wards that were training areas for student nurses. Nurses came almost equally from medical or predominantly medical wards (359/53%) and surgical or predominantly surgical wards (302/45%) with a further 12 (2%) nurses coming from mixed medical and surgical wards. However, seven of the 680 nurses did not indicate their ward type. Sixty-five percent (400) of the nurses stated their ward was a speciality area. The types of speciality were very similar to the descriptions used in defining the population for study and included, for example, hepato-biliary surgery, breast care and medical admissions.

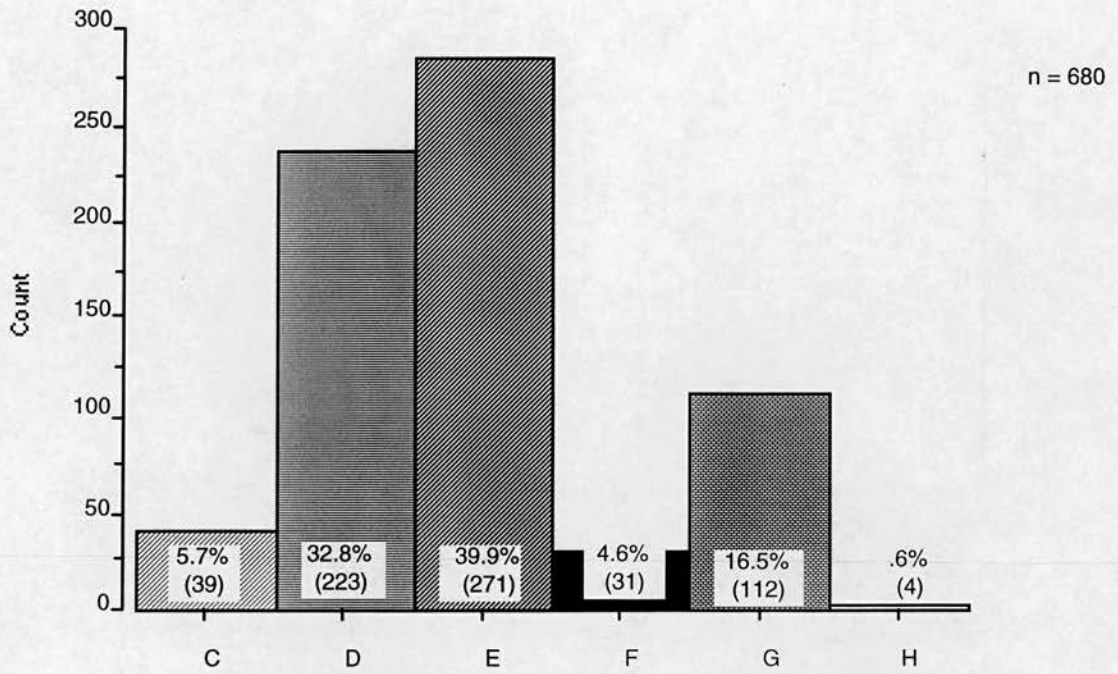
## Personal Characteristics

Of the 680 Charge and Staff Nurses who returned completed questionnaires 94% (637) were female and 6% (43) male. Fifty percent of respondents were age 30 or under and were typically aged 26 to 30 (29%/195) as shown in figure 6.1.

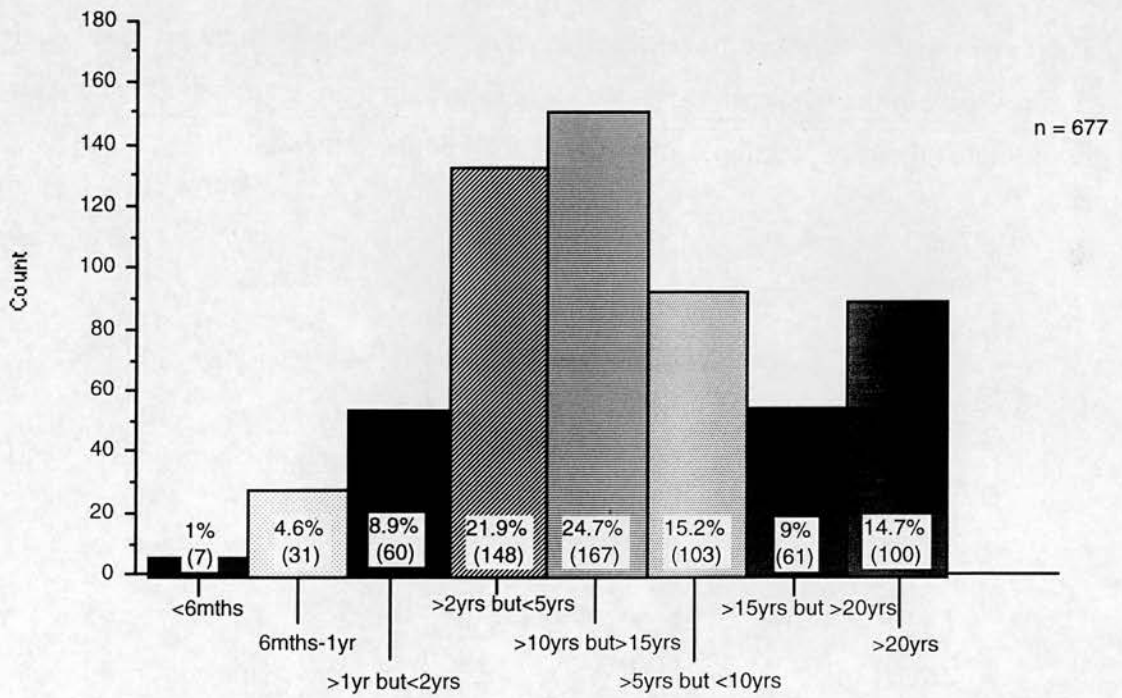


**Figure 6.1 Distribution of respondents by age group**

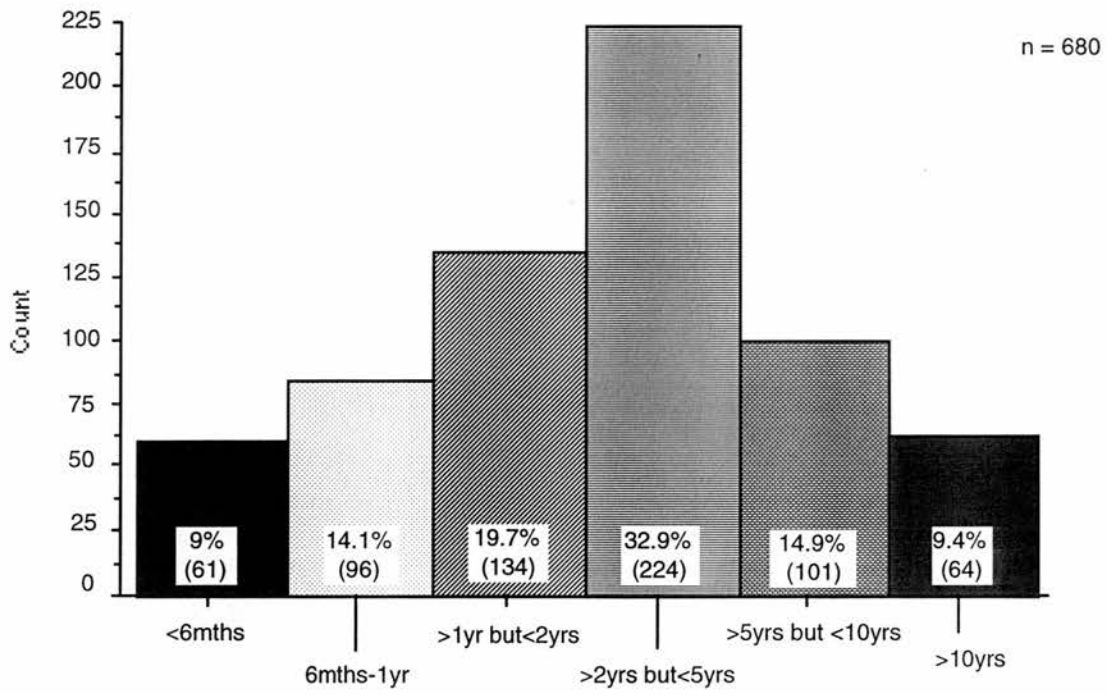
Ninety percent (609) were 1st level registered nurses (RNs) and 10% (71) 2nd level RNs. Twenty percent (136) were at Charge Nurse (CN) grade or equivalent and were over-represented due to disproportionate sampling, whereas 69% (472) were working as Staff Nurses. The proportion of nurses in different clinical grades is shown in figure 6.2. Nurses had most often been qualified between five and ten years (25%/167) (see figure 6.3) and most commonly worked in their current ward for between two and five years (see figure 6.4).



**Figure 6.2 Distribution of nurses in different clinical grades**

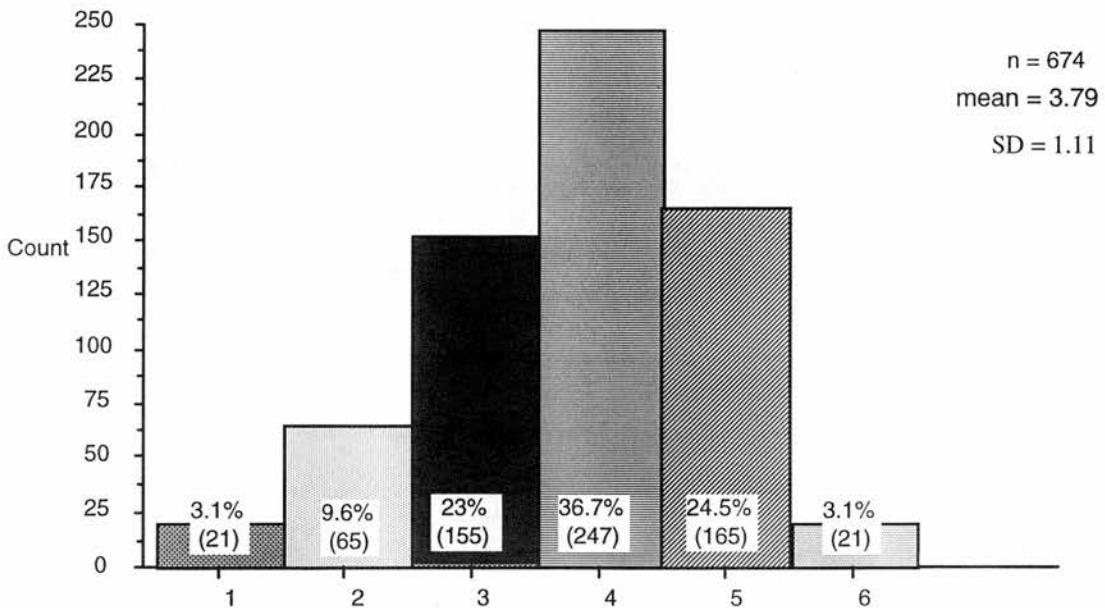


**Figure 6.3 Distribution of length of time qualified**



**Figure 6.4 Distribution of length of time in current ward**

The nurses had been asked to rate their current job satisfaction on a six point scale (figure 6.5). On the whole, nurses were more satisfied than dissatisfied although they mostly rated their satisfaction somewhere in the middle of the scale.

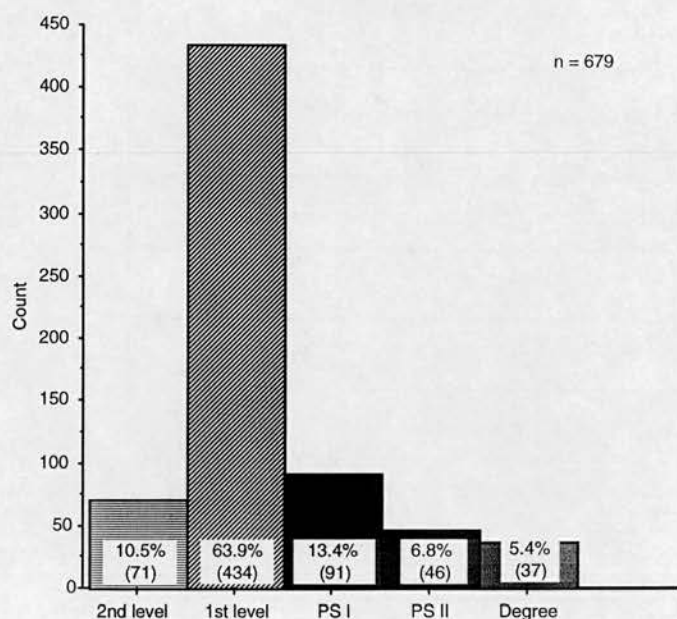


**Figure 6.5 Ratings of job satisfaction (1 = totally dissatisfied, 6 = completely satisfied)**



### Further study and qualifications

The highest qualification achieved by the nurses ranged from registration only (64%/434), through Professional Studies I or II / Diploma level studies (20%/137) to a first degree (5%/37). Only one of the nurses was in possession of a Masters degree. Figure 6.6 shows the distribution of nurses by highest qualification achieved.



**Figure 6.6 Distribution of nurses by highest qualification achieved**

Almost all hospitals stated they offered some kind of study leave to nurses (90%/18) and most offered some paid leave (85%/17). However, only 55% (373) of the nurses replied that any study leave was available to them and 370 of these said that paid leave was available. The number of study days they reported attending over the 12 months prior to the survey was very wide ranging (0 to 100 days). Most commonly, nurses stated they had a maximum of two study days a year (41%/281) and the majority of nurses (83%/539) had up to 9 study days a year. The mean number of study days was 6.5 (SD=11.4, n=652) but there were a small but significant number of nurses who had been given leave for courses of more than one month's duration (n=22), which does skew the results somewhat. On average, nurses reported having 5.6 days of paid leave in a year (SD=11.2, n=630) although, again, this figure is

skewed by a small number of nurses with a high number of days paid leave. Most commonly, nurses stated they had up to four days paid leave a year (68%/428). For further details on study leave see Appendix 7.

Of the study days attended by nurses in the previous 12 months, most of nurses reported that they had been to some in-service training and half of them to a local study day (see table 6.4). However, 11% (75) reported having attended no study days at all.

<b>Type of study day</b>	<b>% Attending*</b>	<b>Number attending</b>
Hospital in-service	64.6%	439
Local study day	50.0%	340
Conference	25.7%	175
Part of course	19.6%	133
Private study day	15.6%	106
Other	6.6%	45
None	11.0%	75

\* as a % of all 680 nurses, many of whom attended more than one type of study day throughout the year.

**Table 6.4 Types of study days attended in previous year**

In terms of education relating specifically to research, 41% (274) of nurses reported studying nursing research at some time and 37% (211) could recall being taught about a topic in nursing from the basis of a research study and its findings. The most commonly mentioned topics they could recall were catheter care, infection control, lifting, pain management, pressure area care and wound care. Yet only 75 nurses had been taught about research utilisation.

### *Reading habits*

Around half of nurses (40%/272) said they spent at least 4 hours a month studying and reading off duty. However, 33.2% (167) reported spending no time studying and reading on duty. The average number of hours spent studying and reading per month on duty was 3.0 (SD=5.0, n=503), and 8.1 hours (SD=10.3, n=580) off duty. (See Appendix 7 for further details.)

All the Directors of Nursing reported that a library was available to their staff but in seven hospitals (35%), it was off site. Yet only 92% (612) of nurses responded that they had a library available to them either on or off site. Half of the hospitals said they circulated research summaries to the wards (50%/10) but only 36% (234) of nurses said they received research summaries on the wards.

Forty percent (265) of nurses said they took nursing journals on the ward and the vast majority of these nurses said they read them. Just about all of the nurses (98%/663) said that they read a nursing journal at least occasionally, with 60% (401) regularly reading at least one journal.

## **POLICIES AND PROCEDURES**

The extent of policies and procedures on the 14 practices was reported by the Directors of Nursing. In up to 16 hospitals (89% n=18), a policy or procedure existed on a practice (Practice no. 13, hand washing). The total number of policies and procedures on all aspects of nursing in a hospital were also recorded as a crude measure of level of complexity in the organisation. The mean number of hospital procedures was 103 (SD=67.9 n=15) and the mean number of hospital policies was 13 (SD=21.1 n=13). Some hospitals had adopted the 'Royal Marsden' book of procedures (Pritchard and Mallett 1992) as their procedure manual. Overall, there was quite a range in the numbers of policies and procedures in the hospitals. Most practices (12/14) had a hospital policy or procedure to support their use in at least 50% of the hospitals responding. However, for all but two of the practices (no.11, closed urinary drainage and no. 13, hand washing) less than 50% of nurses were

aware of the existence of any policy or procedure. For 10 of the 14 practices, less than 30% of the nurses were aware of the existence of any policy or procedure. Further details on hospital policies and procedures are available in Appendix 6 (for data at a hospital level). Summaries of the responses by Charge and Staff Nurses as to whether they thought a policy or procedure existed for each practice are given in Appendix 8.

The sources of learning about a practice were reading, a study day or conference, in-training, some other source, or not sure where it was heard of. These frequency of these responses had to be reviewed for each individual practice and are given in Appendix 8. In general, the nurses had learnt of a practice most often through reading, although many also cited in-training as another major source of learning about practices.

Further details on the characteristics of respondents are given in Appendix 8. Descriptive statistics on the views of nurses on research articles in nursing journals and views on their working environments are given in Appendix 9.

## **THE EXTENT OF NURSING RESEARCH UTILISATION**

Research question one asked: 'To what extent is nursing research utilised by nurses in general medical and surgical wards in the Scottish Health Service?' This question was answered by looking at the mean research utilisation score (RUS) of each of the 14 practices (for all nurses n=680) and by looking at the total mean RUS across all 14 practices.

### **Individual Practices**

First of all, the percent of nurses at each stage of research utilisation for each practice was calculated. This data is presented in table 6.5. The stage of research utilisation for each practice is also shown in graph form in Appendix 10.

No	PRACTICE	% AT EACHLEVEL					n
		Not aware (score 0)	Aware only (score 1)	Persuaded only (score 2)	Use only some-times (score 3)	Use always (score 4)	
1. D	"Any type of antiseptic causes damage to the tissues and is not effective in reducing contamination. In general wards, it is recommended that all wounds are cleansed with normasol or normal saline 0.9%."	16	0	2	8	74	676
2. D	"Wounds, both granulating and sloughy, that are covered with dressings which lead to a moist and occluded environment heal faster than those that are allowed to dry out."	35	1	5	19	40	656
3. M	"Completing a pain assessment chart enables nurses to assess a patient's pain more accurately and so provide more appropriate pain relief."	16	7	22	43	12	674
4. D	"Giving patients information pre-operatively about pain and pain control methods leads to a reduction in pain during the post-operative period."	19	<1	17	15	49	655
5. D	"Patients should be fasted for 4 hours in order to ensure an empty stomach prior to anaesthesia. Fasting for more than 6 hours can in itself lead to complications and discomfort."	43	3	19	20	15	671
6. D	"Shaving leads to an increased rate of wound infection post-operatively. It is recommended that patients are not shaved or that hair is removed with clippers or depilatory cream. This leads to lower rates of wound infection post-operatively."	37	5	28	14	16	659
7. I	"Nurses often find it difficult to communicate with dying people and few patients are satisfied with this area of care. Communication with dying patients should be recognised as one of the most important aspects of nursing care."	4	<1	3	26	67	668
8. I	"There are several stages that dying patients may experience, for example, denial, anger. A knowledge of these can help the nurse understand a patient's behaviour and feelings."	3	0	2	23	72	663
9. D	"For accurate recordings of oral temperatures using a mercury thermometer, the thermometer must be placed in the sublingual pocket for a minimum of 4 minutes."	61	6	11	11	11	664
10. D	"100% silicone catheters (rather than silicone coated or latex) are recommended for patients whose catheters are to remain in for longer than 6 weeks as they are less likely to block."	27	<1	4	17	52	667

D= directly utilised, I= Indirectly utilised, M= Methodologically utilised

**Table 6.5 The 14 research-based nursing practices and the percentage of nurses at each level of utilisation (continued on next page).**



No	PRACTICE	% AT EACH LEVEL					n
		Not aware (score 0)	Aware only (score 1)	Persuaded only (score 2)	Use only some-times (score 3)	Use always (score 4)	
11. D	“Maintaining a closed drainage system for urinary catheters is one of the most important steps in the prevention of urinary tract infections in patients with indwelling catheters.”	4	<1	1	10	85	674
12. D/I	“The use of deliberative touch by nurses for therapeutic means (for example holding of hands or hugging) has been shown to promote psychological well being in some patients.”	16	<1	5	51	28	680
13. D	“In general wards, hand washing should be carried out with liquid soap or antiseptic solution rather than with a bar of soap in order to reduce the risk of cross-infection.”	9	<1	2	12	78	676
14. D	“For effective patient teaching, information should be given using a planned and structured approach rather than being given opportunistically or in an unplanned way.”	28	<1	5	39	28	674

D= directly utilised, I= Indirectly utilised, M= Methodologically utilised

**Table 6.5 The 14 research-based nursing practices and the percentage of nurses at each level of utilisation (continued from previous page).**

The level of research utilisation for individual practices ranged from 85% of nurses always using a practice (closed urinary drainage) to 78% of nurses never using a practice (oral temperature recording). In some practices, there was a spread of nurses from those who were not aware of the practice to those who used it sometimes or always. For example, whilst 40% of nurses always used moist wound healing a further 35% had never heard of the practice. For ten of the practices, there were very few nurses (<1%) who were aware of the practice but did not believe in its use. Once nurses had learned about a practice, it seemed they usually believed it should be used. However, nurses were less certain of four of the practices. For the practices of pain assessment, pre-operative fasting, pre-operative shaving and oral temperature recording, between three and seven percent of nurses were aware of the practices but did not believe that a nurse should use them.

In general, most nurses used a practice at least sometimes once they believed in its use. The main exceptions to this were again pain assessment, pre-operative fasting



and shaving and also pre-operative information giving about pain and pain control. The vast majority of nurses who did not use practices they believed in, said that this was due to them 'not being able to' use them (72-89% of those believing but not using) apart from pain assessment (see table 6.6). (Rates of 'not being able to use' a practice are given for all practices in Appendix 11). Pre-operative fasting and shaving and also pre-operative information giving about pain and pain control do require some co-operation from colleagues and this may have been a barrier (real or perceived) to nurses utilising the practices. Whilst nurses believed in the use of these practices, they were not able to use them for some reason rather than unwillingness on their part to try out the practice. However, the one exception to this was pain assessment where around half (n= 71) of those who said they believed in the practice did not use it, although the reason for this is unclear. A lack of co-operation by others has been cited as one potential reason for the lack of research utilisation (Hunt 1987, Camiah 1997); but there were examples in this study of practices that could be used independently, and those that could be argued to require some co-operation from colleagues, both being under utilised.

Practice	n	No. believing in use of a practice (score 2)	No. believing in use of a practice but 'not able to use'	% believing in use of a practice but 'not able to use'
3 'Pain assessment'	674	144	71	49
4 'Pre-op information'	655	110	79	72
5 'Pre-op fasting'	671	130	116	89
6 'Pre-op shaving'	659	185	148	80
9 'Temperature recording'	664	71	51	72

**Table 6.6 Rates of 'not able to' use a practice for selected practices**

### **Utilisation Without Belief**

Non-linear progression through the stages of utilisation was a possibility. However, utilisation without belief occurred for less than 1% of nurses in seven of the practices

and less than 5% of nurses in six of the practices (see Appendix 11). In the remaining practice (deliberative touch) there was a significant degree of use without belief by 115 (17%) nurses. It would appear that many nurses used this practice although they doubted its usefulness.

Rogers (1983) model of innovation adoption was therefore found to be useful with a linear progression throughout the stages of utilisation from awareness to always using for the vast majority of nurses. A few nurses sometimes used practices whilst not being persuaded of the value of them but only in significant numbers for the one practice (deliberative touch). The majority of nurses used the practice of deliberative touch at least sometimes, yet many were clearly sceptical about its value. Brett (1987) also reports some use without belief but again for only a small percentage of nurses.

### **Mean Research Utilisation Score (RUS)**

The mean RUS of each of the 14 nursing practices was calculated in the manner described in Chapter 5 (see table 6.7). The mean RUS of each of the 14 nursing practices is shown in figure 6.7 and the distribution of scores for each practice in Appendix 10. The internal consistency of the total mean RUS across all of the 14 practices was 0.631 (Cronbach's alpha) n=680. This level of reliability was expected and the interpretation of it is discussed on page 115.

<b>Level of utilisation</b>	<b>Response to question and score</b>	<b>Score</b>	<b>Cumulative score</b>
Aware	Yes=1 No/Unsure=0	1	1
Persuaded	Yes=1 No/Unsure=0	1	2
Use sometimes	Sometimes=1 Never/Not able to=0	1	3
Use always	Always=2	2	4
Maximum possible score for each nursing practice and for total mean RUS on all 14 practices = 4 (Aware, persuaded and always use)			

**Table 6.7 Calculation of Research Utilisation Score (RUS)**

Mean RUS for each practice

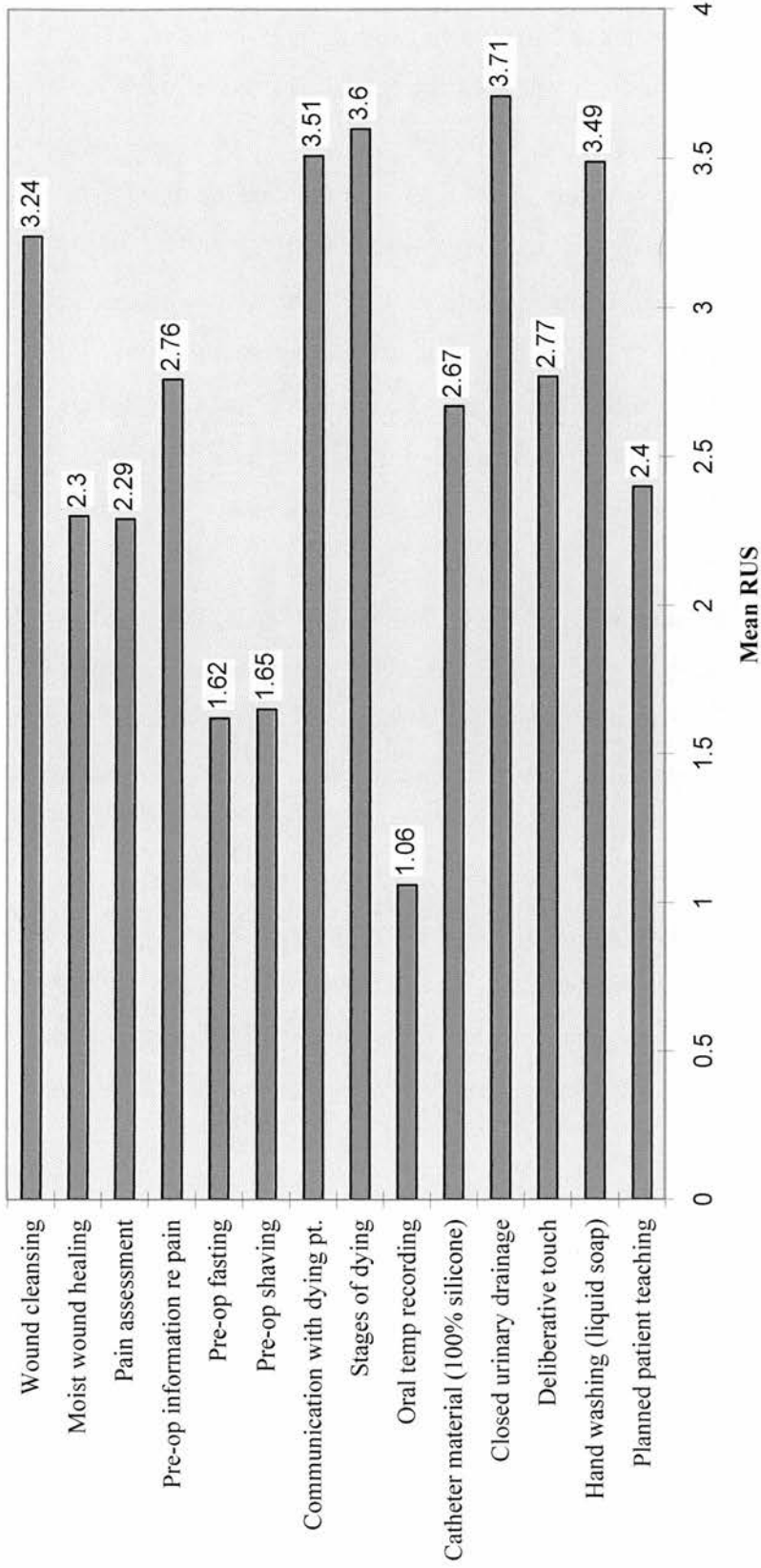


Figure 6.7 Mean RUS of each of the 14 nursing practices

Interpretation of the mean RUS requires reference to the original scoring system as shown in table 6.7. Whilst some authors have attempted to describe practices as being at a particular stage of utilisation according to the mean RUS of that practice, it is difficult to justify the banding of the scores as used in some earlier studies (Brett 1987, Coyle and Sokop 1990, Rutledge et al 1996). The scores are graded as 0-0.49=unaware, 0.50-1.49 = aware, 1.50-2.49 = persuaded, 2.50-3.49 = using sometimes and 3.50-4.00 = using always. It is perhaps more useful to simply relate the mean score to the original scoring system and, further, mostly to use this mean RUS to compare individual practices or nurses extent of research utilisation. The use of the median RUS to describe a practice was considered but, since several of the practices had high numbers of nurses scoring three or four and scoring one (bimodal distribution), the median value would not usefully represent the data.

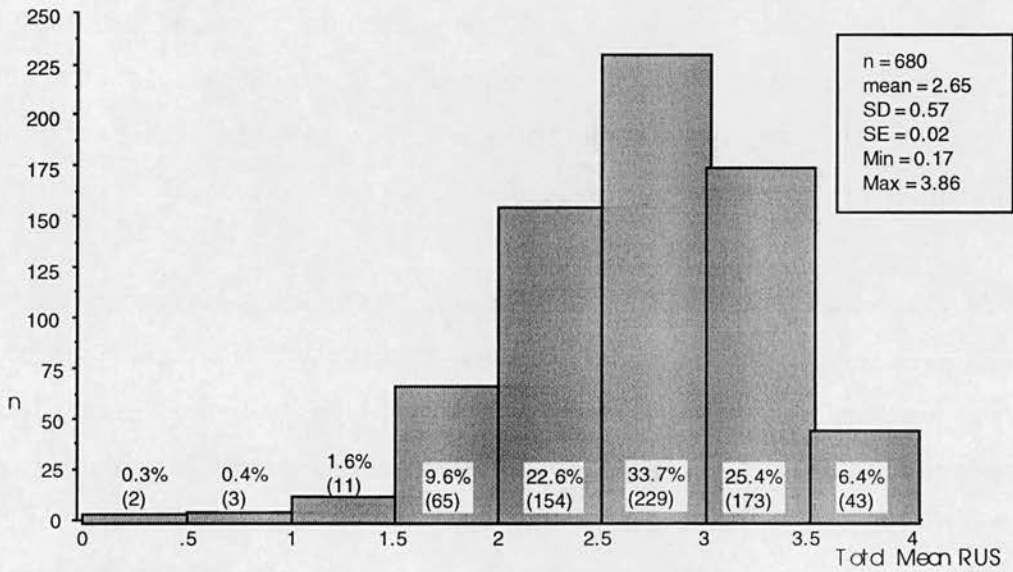
Comparing the mean RUS of each practice demonstrated that there was a range of research utilisation of practices. Some were well-utilised, for example closed urinary drainage (mean RUS=3.71) and stages of dying (mean RUS=3.60), whereas others such as oral temperature recording (mean RUS=1.06), pre-operative fasting (mean RUS=1.62) and pre-operative shaving (mean RUS=1.65) were infrequently utilised. Whilst some of the lower scoring practices could be argued to require a significant level of co-operation from colleagues (pre-operative fasting and shaving), duration of thermometer placement for oral temperature recording was clearly the lowest scoring and could have been implemented quite independently by a nurse. However the majority of nurses (61%) were not even aware of the practice so could not begin to implement it.

Amongst the highest scoring practices were two that were chosen as examples of indirect use of research (communication with dying patients and the stages of dying). It seems that the impact of the indirect utilisation of research may have been underestimated. It may be that nurses found these easier to put in to practice or felt that they were central to their nursing practice. Not only has this phenomenon been neglected in most earlier surveys of research utilisation but also appears to be

neglected by nurses themselves. All of the examples given by nurses in Lacey's (1994) study are of direct use.

### Overall Level of Research Utilisation

The total mean RUS for all nurses across all 14 practices was calculated by firstly calculating each individual nurse's mean RUS across all 14 practices. The distribution of their scores is given in figure 6.8. The mean RUS for each nurse was then summed and divided by the total number of nurses (n=680) to give a total mean RUS of 2.65 (SD=0.57, range 0.17 to 3.86).



**Figure 6.8 Distribution of total mean RUS for all nurses**

The total mean RUS (2.65) indicates that nurses in this survey are on average, between a level of believing in the use of findings and using them sometimes. However, according to Brett's (1987) categorisation of mean scores, nurses in this survey would be at the stage of using research sometimes (between 2.5 and 3.49). Over half of the nurses (59.1%) score between 2.5 and 3.5. The distribution of the scores is slightly negatively skewed. It was a requirement of some of the inferential statistics proposed for analysis of the survey data that the data be normally distributed. A Kolmogorov-Smirnov test (Lillifors variety) was therefore calculated

to test whether the data was likely to follow a standard normal distribution (Seigel 1956). The maximum difference (D) calculated was 0.0534 (n=680)  $p < 0.01$  indicating that it was quite unlikely that this data came from a population where mean RUS would be normally distributed. The skewness could have been as result of mixing different populations together such as Charge and Staff Nurses. However, tests for normal distribution on subsets within the data (by hospital size, clinical grade, ward type and highest qualification) continued to show the data not to be normally distributed. The implications of this are discussed in a later section of this chapter (page 154).

### **Weighting of the RUS**

Whilst the total mean RUS can clearly be argued to represent the sample, extrapolating the data back to the population required weighting calculations to take account of the disproportionate sampling of both the Charge Nurses (CNs) and of the nurses in different sizes of hospitals.

The CN was selected from each ward with at least four registered nurses (RNs), although some wards had less than five nurses in total (CN and RNs) and in this case all nurses were included in the sample. If there were 10 RNs and one CN in the ward in total, and the CN and four of the RNs returned questionnaires, the probability of selection of each RN would be 0.4 (4/10) whereas the probability of selection of the Charge Nurse is 1.0 (1/1). The scores of the nurses are thus weighted by the inverse of their probability of selection in order to ensure representativeness (Kalton 1983). Where the CN did not respond, the mean score of the RNs was taken as the mean ward score since no weighting was required for the CN score.

$$\frac{10/4(RN1 + RN2 + RN3 + RN4) + 1/1(CN)}{11} = \text{weighted ward mean score}$$

Some later analysis of the data was to use the mean RUS of the nurses from each hospital, for example in order to look at any relationship between the number of beds of a hospital and the mean RUS of nurses in that hospital. The mean RUS of a



hospital can be calculated by simply summing the RUS of the individual nurses and dividing this by the total number of nurses. However, this does not take account of the over-representation of the Charge Nurses in the sample. Using the weighted ward mean scores as calculated above would take this into account. It is possible then to sum the weighted ward mean RUS for all wards and simply divide by the number of wards in the hospital to give a weighted mean RUS for the hospital. This method counts each ward as an equivalent unit and was termed 'hospital mean RUS weighted to ward level'. Yet there are some wards within a hospital with a large number of nurses (up to 32) and others with only three or four. A further weighting calculation can be carried out to give a weighting proportionate to the number of nurses in the ward.

$$\frac{(\text{total no. nurses in ward} \times \text{weighted ward mean score})^{\text{wd} 1} + (\text{ })^{\text{wd} 2} + (\text{ })^{\text{wd} 3} \text{ etc}}{(\text{total no nurses in medical and surgical wards in hospital})}$$

This method sees nurses more as the individual units in the hospital and was known as 'hospital mean RUS weighted to individual nurse level'. The weighting does not attempt to reflect the size of the ward in terms of number of beds or volume of nursing care as some wards may be staffed by large numbers of part time nurses and others by a smaller number of full time nurses.

These calculations were carried out (by hand) for all wards and hospitals in the study. (See Appendix 12 for table of all hospital weighted RUS scores). The resultant weighted scores then took account of the disproportionate sampling of the Charge Nurse but not of the different sizes of hospitals. Further calculations had to be made to take account of the over-representation of nurses from medium and small hospitals and the under-representation of those from large hospitals in order extrapolate the data back to the population.

The population (number) of nurses in general medical and surgical wards was unknown, however the total number of hospitals was known and around 50% of them were used in the study. Estimates about the number of nurses in the whole

population therefore are based on knowledge of 51% of the total population of hospitals and the nurses therein. Separate estimates of the population were made for each hospital size group as sampling was carried out according to hospital size group.

There were 18 large hospitals in Scotland with general medical and surgical beds at the time of the study. (This included the hospital used for earlier exploratory and pilot studies). Seven of the hospitals were sampled and within them a total of 827 nurses were found to be working in general medical and surgical wards. The estimated number in 18 large hospitals was therefore  $18/7 \times 827 = 2127$ . Data for all hospital sizes is summarised below in table 6.8.

Hospital size	Total no. of hospitals in population	Hospitals sampled	Total no. nurses in sampled hospitals	Calculation to estimate nurses in population	Estimated total no. nurses in population
LARGE	18	7	827	$827 \times 18/7$	2127
MEDIUM	10	6	521	$521 \times 10/6$	868
SMALL	22	12	404	$404 \times 22/12$	741
<b>TOTAL</b>	50	25	1752		<b>3736</b>

**Table 6.8. Calculation of estimated population of nurses by size group**

The mean RUS for each hospital (weighted to individual nurse level) and the mean hospital RUS (weighted to ward level) were used to calculate a mean hospital RUS small, medium and large hospitals (table 6.9).

Hospital size	Mean score weighted to individual nurse level.	Mean score weighted to ward/hospital level.
LARGE	2.616	2.607
MEDIUM	2.698	2.667
SMALL	2.693	2.688

**Table 6.9. Mean weighted RUS by hospital size**

Firstly, the mean hospital RUS to individual nurse level were used to estimate the mean RUS of the population. The mean RUS (individual nurse level) of each

hospital size group was weighted to represent the proportion of nurses from the size group in the total population of 3736. For example;

$$\frac{\text{No. Nurses sampled in small hospitals}}{\text{Estimated total no nurses in all small hospitals}} \times \text{Mean RUS for small hospitals} = M\text{-small}$$

Where *M-small* = Mean weighted RUS for small hospitals

Each mean weighted RUS for the size group (*M*) was then added together to give an estimate of mean RUS for the population (to individual nurse level).

$$\frac{(2127 \times 2.616) + (868 \times 2.698) + (741 \times 2.693)}{3736} = 2.650$$

It is also possible to calculate an estimate of the mean RUS for the population based on wards and hospitals as individual units. If a hospital is seen as being comprised of wards as separate units, and the provision of acute medical and surgical care in discrete hospitals as individual units, then it may be more appropriate to look at scores weighted in this way. However, this method does not give equal representation to small, medium and large hospitals. As there are larger numbers of small hospitals, they will tend to be over represented in terms of the number of patients served and nurses employed. It was therefore calculated for comparison but thought to represent the population of nurses in all hospitals less accurately than weighting to individual nurse level.

Hospitals mean scores weighted to ward level were then used to calculate the mean RUS for each size group of hospitals. The score was weighted to represent the proportion of hospitals in each of the size group in the total population of 50 hospitals.

$$\frac{\text{No. hospitals sampled in size group}}{\text{Estimated total no hospitals in population}} \times \text{Mean RUS for size group} = \text{Mean weighted RUS for size group}$$

Each mean weighted score for the size group was then added together to give an estimate of mean adoption score for the population (to ward/hospital level).

$$\frac{(18 \times 2.607) + (10 \times 2.667) + (22 \times 2.688)}{50} = 2.655$$

Table 6.10 shows the unweighted, raw RUS of all 680 nurses and the weighted means by hospital size and for all hospitals.

Hospital size	Total mean RUS of sample - unweighted	SE	Total mean RUS weighted to individual nurse level	SE	Total mean RUS weighted to ward / hospital level	SE	n
Large	2.62	0.03	2.616	0.03	2.607	*	312
Medium	2.68	0.04	2.698	0.04	2.667	*	210
Small	2.67	0.05	2.693	0.05	2.688	*	158
All Hospitals	2.65	0.02	2.653	0.02	2.655	*	680

\*SE not calculated

**Table 6.10 Total unweighted and weighted mean RUS**

The standard error of the total mean RUS weighted to individual nurse level was calculated from the variance of the weighted sample mean, which was obtained using the following formula.

$$S^2 = \frac{1}{N^2} \sum N_i(N_i - n_i) \frac{S_i^2}{n_i}$$

- N is the size of the population (estimated total number of nurses in the population - 3736)
- $N_i$  is the number in the  $i$  th population strata (estimated number of nurses in each size of hospital)
- $n_i$  is the number in the sample strata (number of nurses responding in each size of hospital)
- $S_i^2$  is the sample variance for the  $i$  th strata (sample variance of the mean RUS in each size of hospital)

The standard error was calculated by taking the square root of the variance.

The raw unweighted mean RUS of the sample was 2.65 (SE = 0.02) and the weighted total mean RUS (to individual nurse level) was also 2.65 (SE=0.02). The weighted total mean RUS (to ward/hospital level) was 2.66, but no standard error was calculated for this due to the complexity of the calculations.

The sampling error indicates how much the population mean might vary from that of this particular sample. As this was a large sample (n=680) and the standard deviation was not large (0.57), the sampling errors were low in both weighted and unweighted calculations of total mean RUS. The sampling error indicates that for 95 out of 100 samples drawn from this population of general medical and surgical nurses, the total mean RUS would fall between 2.61 and 2.69 (or 2 standard deviations of the sampling distribution away from the mean) for both the weighted and unweighted samples.

Despite the 2-stage sampling over-representing the Charge Nurses and medium sized hospitals whilst under-representing nurses in larger hospitals, it would appear that the sample is large enough to minimise such effects. The effect of cluster sampling appears to have been counterbalanced by adequate stratification.

## **RESEARCH UTILISATION AND INFLUENCING FACTORS IN THE SURVEY**

Research question two asked, which influencing factors are associated with a high/low level of research utilisation? This question was answered by comparing the total mean research utilisation score (RUS) of nurses divided into different subgroups on the basis of different characteristics, and by looking at the relationship between total mean RUS and ordinal and interval level variables.

## **Inferential Statistics**

The unit of analysis for the majority of the study was the individual nurse although some influencing factors at hospital level could only usefully be tested and related to the hospital total mean RUS. When hospital total mean RUS was used for analysis, the score weighted to individual nurse level was used as this score was thought to be the closest representation to the total mean RUS of all nurses in the hospital.

The distribution of the total mean RUS for all nurses and for some subgroups was not normally distributed (as described previously on pages 147-148 of this chapter). Whilst many parametric tests are fairly robust to small deviations from normality there is a greater risk of a type I error when they are used on data not normally distributed (Polit 1996, Anthony 1999). Non-parametric tests were therefore used in the majority of the analyses. However, Anthony (1999) also states that parametric tests may be suitable when the deviation from normality is not too great, no suitable alternative test exists and when the analysis is exploratory in nature. The use of factor analysis and multiple regression were therefore justified on these grounds. Pearson's  $r$  was also used as a correlation co-efficient where the influencing factor (independent variable) was at or approximating an interval level variable so that comparisons could be made with later findings of multiple regression analysis.

The level of significance ( $\alpha$ ) for all tests was set at  $p < 0.05$  as discussed in the section on power analysis in Chapter 5 (page 120). Whilst a large number of tests in total were performed on the data as a whole, Bonferroni's correction was not applied apart from on post hoc tests on subsets of data with more than two categories (Dunn's procedure) (Polit 1996).

To compare the RUS of nurses/hospitals in two subgroups, the Mann Whitney U test was used. When there were a large number of ties in the data, the value of  $z$  corrected for ties was taken. However, if the number of ties was small, the uncorrected value of  $z$  was used since this is more conservative (Siegel 1956). For comparisons of the RUS of nurses/hospitals in three or more subgroups, the Kruskal Wallis test was used which is a non-parametric version of ANOVA. When the independent variable



(potential influencing factor) was at least ordinal level, tests of correlation were conducted to measure the strength and direction of relationships. Ordinal level independent variables were analysed using Spearman's rank correlation coefficient and interval data with Pearson's  $r$ . The significance level then indicates how likely the relationship is to have occurred by chance. Correlation tests look only at linear relationships. Scattergrams were therefore plotted for all interval level independent variables to look for non-linear relationships. Where non-linear relationships were seen, the data was transformed through taking the log or square root values of the independent variable as appropriate, to transform the data to look for linear relationships.

### **Influencing Factors at Individual Nurse Level**

All the potential influencing factors or independent variables in the Charge and Staff Nurse questionnaire were analysed as described above to test for relationships with total mean RUS. Appendix 13 gives the results of all tests on all variables whilst mostly significant findings are reported here. A list of variables that were not significantly associated with total mean RUS is given in table 6.11. Table 6.11 excludes responses to Questions 28a to 29p (their views on research articles in nursing journals and their working environment) although they are fully reported in Appendix 13. These responses were subject to further analysis using factor analysis to reduce the data, and relationships with total mean RUS are therefore discussed later in the chapter with this reduced data set.

<b>Variables</b>
Hospital size
Hospital location
Hospital type
Whether ward a speciality
Whether ward a training area
Gender
Job title
Availability of study leave
Type of study leave
Information on research utilisation
Means of study providing information on research utilisation
Library access
Read ward journals
Read Nursing Times
Read Nursing Standard
Age group
Length of time qualified
Length of time on current ward
No. of study days funded
Time spent studying on duty

**Table 6.11 Individual nurse variables showing no significant relationship with total mean RUS (excluding Likert statements)**

There was a significant difference in the total mean RUS of nurses in surgical, medical and mixed wards (see table 6.12). As there were only a small number of wards in the categories of predominantly surgical and predominantly medical, these were merged with surgical and medical respectively for most of the analyses. Looking at the mean scores, nurses in mixed wards scored highest but there were only a very small number of these and they were all from small hospitals, so generalisations from this group must be made with some caution. Nurses in surgical wards scored almost as high as nurses in mixed wards, on average, and significantly higher than those in medical wards. It could be argued that some of the nursing practices were more familiar to surgical nursing (Practice no. 4 pre-op information, no. 5 pre-op fasting and no. 6 pre-op shaving). The scores from these practices were therefore removed from the calculation of the total mean RUS and a Mann Whitney U test between the scores of medical and surgical nurses was conducted. Surgical nurses continued to score significantly higher than medical nurses ( $z = -4.468$ ,

Variable	Categories	n	Mean RUS	SD	Test Result	Total n
Ward type	Surgical	302	2.80	0.53	H=47.84 p=0.0001	673
	Medical	359	2.51	0.58		
	Mixed	12	2.87	0.45		
Highest qualification	2nd level reg	71	2.52	0.69	H=16.36 p=0.001	679
	1st level reg	434	2.61	0.54		
	Professional Studies Degree	137	2.70	0.61		
	Degree or Professional Studies	174	2.78	0.59	z=-3.819 p=0.001	679
	All others	505	2.60	0.56	z=-2.58 p=0.01	679
	Degree	37	2.86	0.57		
Whether studied nursing research	Yes	274	2.77	0.55	z=-4.44 p=0.0001	659
	No	385	2.57	0.59		
Topic taught based on nursing research	Yes	211	2.77	0.53	z=-4.93 p=0.0001	408
	No	197	2.51	0.56		
Circulation of research summaries	Yes	234	2.76	0.59	z=-3.37 p=0.0007	617
	No	383	2.61	0.56		
	Yes	234	2.76	0.59	H=17.36 p=0.0002	652
	No	383	2.61	0.56		
Don't know	35	2.39	0.64			
Whether ward gets journals	Yes	265	2.71	0.58	z=-2.68 p=0.0074	649
	No	384	2.60	0.58		
	Yes	256	2.71	0.58	H=8.70 p=0.0129	662
	No	384	2.60	0.58		
Don't know	13	2.83	0.45			
Journals read	Regularly read at least one	401	2.71	0.57	z=-2.98 p=0.0029	664
	Occ. read at least one	263	2.55	0.59		

**Table 6.12 Significant differences between subgroups of nurses on total mean RUS**

p<0.0001, n=673). Other differences between medical and surgical wards might account for the difference in research utilisation. These could include workload or the level of qualifications achieved by nurses may be different in the two types of wards. No data on the workload of the wards had been collected as part of this survey but the total number of trained nurses per ward was known. There was, however, no difference in the total number of trained nurses per ward between medical and

surgical wards in a Mann Whitney U test (n=149). A further test to compare the highest level of education achieved by nurses in medical and surgical wards again showed no significant difference ( $\text{Chi}^2=2.471$ ,  $\text{df}=3$ ,  $p=0.48$ ,  $n=673$ ).

Whilst there was no significant difference between the scores of Charge Nurses and other grades of nurses, a further 'ward' effect was seen when the scores of every registered nurse were paired with the score of the Charge Nurse in their ward. There was a significant and moderate correlation between the total mean RUS of the registered nurse and that of the ward Charge Nurse ( $r = 0.23$   $p<0.0001$   $n=421$ ). This was a positive correlation in that if the Charge Nurse had high research utilisation, it was likely that the registered nurses in that ward would also have high research utilisation.

The qualifications of the nurses were grouped in an ascending order from 2<sup>nd</sup> level registration, 1<sup>st</sup> level registration, Professional Studies or Diploma, to all types of degrees. This data was treated both as an ordinal scale and also as groups further combined for comparative analysis (see table 6.12). There was no difference in the scores of 1st and 2<sup>nd</sup> level registered nurses, but nurses who had a degree or a diploma scored significantly higher than those with registration only. Comparing nurses with a degree to all others, nurses with degrees again had a higher rate of research utilisation. When analysed as an ordinal scale, highest qualification correlated significantly and positively with total mean RUS in that a higher qualification was associated with a higher mean RUS (table 6.13). Whilst the correlation is highly significant and most unlikely to have occurred by chance, the relationship is relatively weak at  $\text{Rho}=0.12$ .

Variable	n	Correlation test	Significance
Job satisfaction	674	Spearman's Rho	Rho=0.084 z=2.188 p=0.0287
Sq Root No. of study days attended	652	Pearsons	r=0.095 p<0.05
Time spent studying off duty	580	Pearsons	r=0.1 p<0.05
Clinical grade	680	Spearman's Rho	Rho= 0.08 z=2.14 p=0.0322
Highest qualification	679	Spearman's Rho	Rho= 0.15 z=3.84 p=0.0001

**Table 6.13 Significant correlations between variables at individual nurse level and total mean RUS**

Further associations with studying and reading were also found. After transforming the data on the number of study days attended over the 12 months prior to the survey (square root), a positive linear correlation with mean RUS was seen (table 6.13). The number of hours a month spent studying and reading on duty showed no relationship with research utilisation but the number of hours studying and reading per month off duty had a weak positive correlation (table 6.13). Nurses who had studied nursing research at some time had a significantly higher total mean RUS than those who had never studied nursing research (table 6.12). Also, nurses who could recall being taught about a topic in nursing from the basis of a research study and its findings, had a significantly higher research utilisation than those who had never been taught in this way (table 6.12). There was no significant difference in research utilisation between nurses who had and had not been given information about research utilisation, but the numbers of nurses responding to this question was low at n=250 so there is a risk of a type II error. Many nurses may have chosen not to answer the question if they did not understand it and they might well be part of the group who have had no teaching on research utilisation.

The nurses who had summaries or titles of recently published research articles circulated to their ward had a significantly higher total mean RUS compared to those who did not receive summaries (table 6.12). The nurses who did not know whether

their ward received such summaries scored lowest of all and perhaps did not have a strong motivation or interest to seek any out. The nurses who were in wards that took one or more nursing journals had a significantly higher mean RUS than those on wards who did not take journals (table 6.12). However, there was no difference in the research utilisation of nurses who read these ward journals and those that did not. Perhaps the fact that someone in the ward makes an effort to secure journals for the ward says more about the type of ward environment in general as one where nurses are interested in developing their knowledge rather than about the journals per se. Whilst almost all of the nurses said that they read a nursing journal at least occasionally, those who read regularly had a significantly higher research utilisation (table 6.12).

Whilst there was no significant difference in research utilisation according to the nurses' different job titles, a higher clinical grade was positively associated with total mean RUS (table 6.13) although again the correlation was weak. When the score of the Charge Nurse was compared to that of all other nurses as a group, there was no significant difference in their scores although the Charge Nurses did score higher on average (2.72 versus 2.63).

Job satisfaction correlated significantly with total mean RUS. The higher the nurse's job satisfaction, the higher the total mean RUS tended to be. Job satisfaction was associated with research utilisation in earlier studies (Brett 1986 and Coyle and Sokop 1990). It was suggested that nurses had both high job satisfaction and research utilisation due to the amount of management support given to them.

The total mean RUS of nurses who had heard about a practice from a particular source was compared with the scores of nurses who had not heard about it in this way. This comparison was conducted for each of the 14 practices on each of the five different sources of learning about a practice as shown in table 6.14. Where there was a significant difference in the total mean RUS of the nurses, inspection of the distribution of scores showed that nurses who stated they learned of a practice in this way, always scored higher than those who had not learnt about a practice in this way. The number of practices where a difference was seen by source of knowledge is



given in table 6.14. Where nurses had heard about a practice through a study day or conference, they often had a higher research utilisation of that practice (9 out of 14 practices). However, in half of the practices, nurses who were not sure of where they heard about a practice and those who named some other source (often a colleague) also had a higher research utilisation of that practice.

Source of knowledge	No of practices with significant differences p<0.05
Reading Literature	5
Study Day or Conference	9
In Training	3
Other source	7
Not sure where heard of it	7

**Table 6.14 Number of practices with differences in total mean RUS according to the source of knowledge of the practice**

Factor analysis was conducted on the questions in the Charge and Staff nurse questionnaire on views on research articles in nursing journals (six questions – 28a to 28f) and views on their working environments (16 questions – 29a to 29p). The factor analysis sought to reduce this large numbers of variables into smaller more manageable sets of data by identifying which variables grouped together.

Factor analysis began using a correlation matrix to seek out which items or variables cluster together. A factor is a linear combination of weighted scores of the variables.

$$\text{Factor} = b_1X_1 + b_2X_2 + b_3X_3 + \dots + b_kX_k$$

(Where b = weighting, X1 to Xk are the variables)

The number of factors to be used in factor analysis can be determined in several ways but is essentially a subjective decision. Cut off points for the inclusion of factors may be:

- when eigen values fall below 1 (eigen = sum of squared weights for each factor),

- when 70-80% of the variance has been accounted for,
- when a factor explains less than 5% of the variance,
- when the slope of a scree diagram levels off (there is a sharp fall in the % variance explained by each factor).

In this study the slope of the scree diagram was examined to determine the cut off point. A factor matrix was then constructed to show how each variable loads according to each factor. The loadings may be from +1.00 to -1.00, a loading nearest 1.00 representing a high value. The point at which the variable is not thought to load with any real value is usually around 0.40 to 0.30. A six-factor solution was arrived at which incorporated all but five of the questions (28f, 29b, 29h, 29i, 29n – see table 6.17 later).

Principal components analysis then sought to identify factors that provide a representation of independent sources of variation in the data. The first component accounts for as much of the variance as possible, the second accounts for as much as possible of the remaining variance and so on until no further meaningful variance is left. A further orthogonal varimax rotation of the data was conducted to view the data in a different way and aim for independence in the variables (Anthony 1999).

The resultant groups of variables or factors were examined to look at dimensions common within the factor. Themes or theoretical constructs arose from this and the factors were titled appropriately (see table 6.15).

Factor	Q. no.	Statement	Factor loading
1. Autonomous professional practice	29c	I feel I have the authority to make decisions about nursing practice in the ward.	0.638
	29g	In this ward, nursing practice is based on the way it has always been done.	-0.629
	29j	Care is not routinised, but organised in a flexible manner according to patients' individual needs.	0.637
	29k	Changes in practice are driven by the ward nurses	0.673
	29m	The staff on this ward are encouraged to reflect on and question practice.	0.702
	29o	In this ward, nursing practice is based on a consideration of research, personal knowledge and experience.	0.633
2. Research is easy to read and relevant	28a	Research is very readable and easy to understand.	0.830
	28c	Most nursing research is very relevant to my clinical practice.	0.365
	28d	The articles contain a lot of difficult language and jargon.	-0.731
3. Multi-disciplinary co-operation	29e	The multidisciplinary team are very co-operative in working with us to introduce changes in nursing practice.	0.790
	29f	The other departments in the hospital are very co-operative in working with us to introduce changes in nursing practice.	0.866
4. Information overload	28b	There are too many journals to keep up to date with.	0.866
	28e	There are too many articles to read on most topics.	0.757
5. Leadership	29a	The nurse manager always gives strong support to help staff introducing change in the ward.	0.687
	29p	The charge nurse is a strong ward leader and motivator (Grades C, D, E, & F only) <b>OR</b> My nurse manager is a strong leader and motivator (G & H only)	0.819
6. Barriers to implementing change	29d	There is too much bureaucracy and red tape in getting changes in nursing practice agreed.	0.783
	29l	We do not have the resources (staff/equipment) to implement new ideas.	0.647

**Table 6.15 The six Factors and their descriptors**

In Factor 1, autonomous professional practice, the items related to the ability to work independently, to make decisions about patient care based on evidence and to be able to question practice. Factor 2 consisted of items related to how easy to read and relevant nurses considered research publications to be, whilst Factor 3 was about co-operation from other members of the healthcare team in making practice changes. However, the item relating to co-operation from medical staff did not load in to this Factor which suggests that nurses view co-operation by PAMS and other non-medical hospital staff in a different way to co-operation by medical staff, as regards research utilisation and introducing practice changes. Factor 4 was termed information overload being concerned with a sense of being overwhelmed with research and articles. Factor 5 saw views of the nurse manager and ward leader varying in the same way, whilst Factor 6 related to the barriers nurses perceived to implementing change. However, this part of the analysis is clearly subjective in that different researchers may interpret items in a factor differently and describe different emergent concepts or constructs.

Factors were tested for both reliability (internal consistency) and for relationships with total mean RUS (table 6.16).

\*score of 1= strongly agree, 5= strongly disagree

Factor	Cronbach's alpha	% total variance explained	Total mean Likert score*	SD	n
1. Autonomous professional practice	0.758	15.9	2.30	0.639	650
2. Research is easy to read and relevant	0.433	8.8	3.01	0.576	654
3. Multi-disciplinary co-operation	0.696	9.2	2.92	0.752	661
4. Information overload	0.570	8.4	2.58	0.706	652
5. Leadership	0.640	9.7	2.78	1.010	650
6. Barriers to implementing change	0.385	7.5	2.55	0.783	661
		Total = 59.5			

**Table 6.16 Reliability, % total variance and total mean Likert score of the six Factors.**

The reliability of Factors 2, 4 and 6 was low although the reliability co-efficient for Factor 4 is approaching 0.6 (0.570). These Factors should ideally be re-explored with further data sets to confirm or disprove them. However, for the purposes of this study, they gave an indication of how views on research articles in journals and on the working environment scaled together. The total amount of variance explained is almost 60% with Factor 1 accounting for almost 16% of the variance. The total mean Likert score for each Factor was taken by simply calculating the mean of all the item scores for that Factor. This shows that on average, nurses tend to agree slightly that they have autonomous professional practice but mostly neither agree nor disagree with the other statements. This is unsurprising since they are mean values of a large number of nurses and several questions with a central tendency around a middle value of three that indicates 'neither agree nor disagree'.

The Factors were tested for any relationship with total mean RUS using Pearson's correlation co-efficient. The six remaining items that did not scale reliably in the factor analysis were also correlated individually with total mean RUS (table 6.17).

<b>Factor</b>	<b>n</b>	<b>Pearson's r</b>	<b>p</b>
1. Autonomous professional practice	650	-0.156	p<0.001
2. Research is easy to read and relevant	654	-0.094	p<0.05
3. Multi-disciplinary co-operation	661	NS	-
4. Information overload	652	0.103	p<0.05
5. Leadership	650	NS	-
6. Barriers to implementing change	661	0.087	p<0.05
28f. It is difficult to know what the implications for practice are.	658	0.148	p<0.001
29b. The medical staff are not supportive in working with us to introduce changes in nursing practice.	664	NS	-
29h. There is no time to look at and / or implement new ideas.	663	NS	-
29i. I feel constrained by the hierarchy in making changes in practice.	659	0.125	p<0.01
29n. Changes in practice are driven by senior managers.	661	0.115	p<0.01

(A negative correlation indicates the greater the agreement with the statement, the higher the research utilisation score).

**Table 6.17 Correlating Likert statement Factors 1 - 6 and remaining Likert statements with total mean RUS**

The responses to the Likert type questions were scored from one for strongly agree to five for strongly disagree. Therefore a negative relationship between Likert statement and/or Factors 1 to 6 indicates that when respondents agreed with the Likert statement/s, they also tended to have high levels of research utilisation.

Factor 1, autonomous professional practice was most strongly associated with total mean RUS. The more nurses felt that their practice was autonomous and based on evidence, the higher their research utilisation was. If nurses believed that research was easy to read and relevant to their practice (Factor 2) they also had a higher research utilisation. Conversely those who thought there was too much to read (Factor 4), that the implications for practice were not made clear in research (item 28f) and those who felt there were barriers for them in implementing change (Factor 6) tended to have lower research utilisation. Whilst a lack of co-operation from medical and multidisciplinary staff (Factor 3 and item 29b) and a lack of time had been cited by several earlier studies and authors as barriers to research utilisation, they were not associated with research utilisation in this study. When nurses thought they were constrained by the hierarchy (29i) and that changes in practice were directed by managers rather than themselves (29n), the nurses had lower research utilisation. Overall, nurses who could manage the volume of research literature and read and interpret it had higher research utilisation. Those who felt they practiced autonomously and from an evidence base, and did not feel constrained in making changes in practice also had higher research utilisation.

### **Influencing Factors At Hospital Level**

All the potential influencing factors or independent variables in the Director's of Nursing questionnaire were analysed as described above to test for relationships with the hospital total mean RUS (weighted to individual nurse level). Appendix 14 gives the results of all tests on all variables whilst mostly significant findings are reported here. A list of variables that were not significantly associated with total mean RUS is given in table 6.18.



Variable	Variable
Hospital size (small, medium, large)	Type of research nurses involved in
Hospital location (rural, suburban, urban)	Availability of study leave
Hospital type (teaching, non teaching)	Type of study leave
Full-time quality assurance nurses	Library access
Full-time continuing education nurses	Circulation of research summaries
Full-time nursing research nurses	No. of hospital procedures
Nurses with designated responsibility for quality assurance	No. of hospital policies
Nurses with designated responsibility for continuing education	No. of WTE trained & untrained nurses (day & night duty)
Nurses with designated responsibility for nursing research	No. of 1st level registered nurses
Time given to nurses to do research?	No. of trained nurses
Research committees?	No. of WTE staff/bed
Type of research committee	No. of trained staff/bed
Whether research done in the hospital in past 12 months	No. of 1st level registered nurses / bed
Type of research carried out	% Trained staff
Involvement of nurses in research	

**Table 6.18 Hospital level variables showing no significant relationship with total mean RUS.**

Most of the variables from the Directors of Nursing (DN) questionnaire showed no significant relationship with total mean RUS. The main unit of analysis in this study was at the level of the individual nurse and sample sizes had been calculated accordingly. Therefore the power of the tests conducted at a hospital level is low as the maximum number of cases available is 25. The power for the correlation tests assuming a weak ( $r=0.2$  to  $0.3$ ) but significant ( $\alpha = 0.05$ ) relationship and a sample size of 20, is only around 0.2 to 0.4. There is therefore between 80% to 60% chance of committing a type II error. Such a high chance of missing significant relationships due to the small sample size limits the interpretation of this data and may explain in part the large number of non-significant findings.

There was a significant difference in hospital total mean RUS between hospitals who had some 'other' type of research committee (other than a Unit or Trust one or a nursing research committee) and all others (table 6.19).

Variable	Categories	Mann-Whitney test result & significance	n
Type of research committee	Other type of committee / Others	$z=-2.0$ $p=0.0455$ (Yes<No)	9
Type of study leave	Paid leave / Others	$z=-2.206$ $p=.0395$	19
	Fees paid / Others	$z=-2.262$ $p=.0237$	19
	Travel paid / Others	$z=-2.314$ $p=.0208$	19

**Table 6.19 Significant differences between two or more subgroups of hospital level variables from Director's of Nursing questionnaires on total mean RUS of hospital (weighted to individual nurse level).**

However, only nine replied to this question and, of these, only two stated they had this 'other' type of committee. Little emphasis is therefore placed on this finding.

Where hospitals offered paid study leave, to pay the fees for study leave, or to pay travel expenses for study leave, the hospital total mean RUS was significantly higher (table 6.19). When the number of beds in a hospital was correlated with total mean RUS no significant relationship was seen. However, on inspecting a scattergram of this data, there were two hospitals that did not fit with the general distribution of the data. The tendency was for hospitals with larger number of beds to have a lower total mean RUS, but there was one large hospital that had a very high score and a small hospital that had a very low score. Polit (1996) argues that outliers may be overly influential in analyses with small numbers of cases and that caution should be exercised in including them in the analysis. Removing the two outlying hospitals from the correlation increased the correlation from  $-0.276$  to  $-0.474$  (see table 6.20).

Variable	n	r	Significance
Bed no.	25	-0.276	NS
Bed no. minus two outliers	23	-0.474	p<0.025
% 1st level registered nurses	19	0.458	p<0.05

**Table 6.20 Significant correlations between total mean RUS of hospital (weighted to individual nurse level) and hospital level variables (All Pearson's r)**

With all hospitals included in the analysis, the trend for decreasing research utilisation with increasing hospital size was not significant at  $p<0.05$ . Yet when the two outliers were removed the strength of the relationship was much greater accounting for some 22.5% of the variance ( $r^2=0.225$ ) in the hospital score. The relationship was also significant at  $p<0.025$  and so was unlikely to have occurred by chance.

One further variable correlated significantly with total mean RUS at hospital level. As the proportion of nurses in the hospital who were 1<sup>st</sup> level registered nurses increased, research utilisation also increased. No relationship was seen between research utilisation and the proportion of trained nurses employed although the risk of type II errors is high with the low number of hospitals in the analysis.

In general, in smaller hospitals, in hospitals that employ a high proportion of 1<sup>st</sup> level registered nurses, or where nurses have financial support for study leave available to them, there is higher research utilisation.

The relationship of hospital or ward policies and procedures with research utilisation could be studied from both the nurses' perceptions of whether a policy or procedure existed or not and the actual existence of a policy or procedure as reported by the Director of Nursing. (In this analysis, the term policy or procedure includes those at both ward and hospital level.) Considering the nurses' use of the 14 individual practices, the actual existence of a policy or procedure was not associated with

utilisation of that practice except for two of the practices – time for oral temperature recording (no. 9) and hand washing with liquid soap (no. 13). For these two practices there was significantly more use by nurses when a policy or procedure of any kind existed. Interestingly, one of the practices (temperature recording) was, on average, the least well utilised of all 14 practices and the other (hand washing) one of the most well-utilised. Results of tests for all practices on existence of a policy or procedure and mean RUS are given in Appendix 15.

Belief in the existence of a policy (whether one existed or not) was more clearly related to use of the practice. For all 14 practices, when nurses believed a policy or procedure existed, their RUS was significantly higher than for nurses who thought there was no policy or procedure (all Mann Whitney U tests with  $p < 0.0005$ ) (see Appendix 15). Either belief in the existence of a policy precedes the use of a practice or, perhaps more likely, when nurses were using a practice they believed that a policy or procedure must exist to support their actions. The influence of ward or hospital policies or procedures on utilisation of the 14 practices was minimal but was associated with a perception of the existence of a policy or procedure.

### **Multi-Variate Analysis**

In this study there were a large number of variables some of which were individually significantly associated with total mean RUS as a measure of research utilisation in univariate analysis. However, the relationship of two or more independent variables with total mean RUS can also to be tested. Multiple regression enables study of how well a group of variables predicts a dependent variable. Some of the independent variables, such as gender, were dichotomous and there were yes/no type answers to some questions. These types of variables may be added into a multiple regression analysis through the creation of dummy variables (Bryman & Cramer 1994). Where  $k$  = number of categories of response to a question, only  $k-1$  dummy variables need to be constructed as a code of 0 on all dummy variables responses to one question implies the response of the category not coded as dummy through deduction. Hence, only the dummy variable of 'male' for gender was used as a score of 0 on this implied female gender. As some of the independent variables may be highly correlated (hospital size group and bed number for example) adding both variables in

to an explanatory equation would add little to the explanation of the variance in the dependent variable. A correlation matrix was therefore constructed with all independent variables and those with a high correlation ( $r > 0.8$ ) identified. Only one of the two inter-correlated variables was entered into the analysis. The correlation matrix for the variables used in the multiple regression is given in Appendix 16. A further requirement of multiple regression is that all measures of independent variables are standardised; otherwise, variables with a wider range of values would exert an undue effect. All variables for this analysis were therefore converted to z scores to have a mean of 0.0 and standard deviation of 1.0.

There are three main approaches to adding variables into the analysis. Firstly they can be entered simultaneously, but this may leave a good portion of the variance in the dependent variable unaccounted for when there are large numbers of variables and some inter-correlation. Variables can also be added in a hierarchy determined by the researcher but this becomes complex with large numbers of variables. In step-wise multiple regression (forward), the order in which variables are added is determined by how much of the residual variance is explained by the addition of the variable. It is useful when there are large numbers of variables and in exploratory analyses (Polit 1996). However, step-wise multiple regression does require a larger ratio of cases to variables than other types of multiple regression. Cohen and Cohen (1975) recommend a minimum of 13 cases per variable. Once inter-correlated variables, variables that overlapped in their description of the nurses (job titles) and variables with large amounts of missing data ( $n > 60$ ) were removed from the analysis, a total of 38 variables (listed in Appendix 17) were available for analysis with 528 cases. This gave a ratio of 14 to 1.

In step-wise regression, the variable most highly correlated with the dependent variable is added firstly into a linear regression equation ( $Y = a + b_1X_1 + \text{error}$ ). Further variables are added in order of adding to the total variance in the dependent variable ( $R^2$ ) and not necessarily the next most highly individually correlated variable. ( $Y = a + b_1X_1 + b_2X_2 + b_kX_k + \text{error}$ ). Variables are sought that have little overlap or low correlation with the first independent variable identified, but correlate highly with the dependent variable. Consequently, the order of entry affects their

apparent contribution to the prediction. One cannot therefore conclude that one independent variable influences the dependent variable (research utilisation) more than another.

The final regression contained six variables including: the nurse's highest qualification, score on Factor 1 (autonomous professional practice), whether the nurse worked in a surgical ward or not, whether the nurse had studied nursing research, whether research summaries were circulated to the nurse's ward, and whether the nurse read Professional Nurse at least occasionally (see table 6.21). The standard co-efficient enables comparison of the strength of the relationship of each individual variable with total mean RUS variance remaining after entry of the variable/s in the previous step/s. Working in a surgical ward was entered as the first step in the analysis as it accounted on its own for more variance in total mean RUS than any of the other 38 variables entered.

<b>Variable</b>	<b>Coefficient</b>	<b>Standard error</b>	<b>Standard coefficient</b>	<b>F to remove</b>
Highest qualification	0.056	0.026	0.092	4.551
Factor 1 (Autonomous professional practice)	-0.091	0.038	-0.099	5.711
Working in a surgical ward	0.287	0.047	0.246	37.449
Yes – studied nursing research	0.153	0.050	0.130	9.410
Yes – circulation of research summaries to ward	0.135	0.049	0.112	7.461
Reads Professional Nurse	0.107	0.049	0.092	4.849

**Table 6.21 Step-wise multiple regression variables entered**

In multiple regression, the final equation can be limited in the total amount of variance explained. The overall correlation between the six variables and total mean RUS was  $R=0.408$  ( $n=528$ ) which explained 16.6% of the variance. An adjustment for sampling, data collection and/or measurement error was made to give a closer estimate of  $R$  in the population (Black 1999). This resulted in an  $R^2$  value of



0.155 and so explained 15.5% of the variance in total mean RUS. Whilst this seems quite a low amount of variance being explained, Cohen (1977) states that an  $R^2$  of 0.13 is a medium effect size and 0.3 large. There is still though a further 84.5% of the variance unexplained.

However, it was possible to calculate the F ratio to see if the multiple regression coefficient occurred by chance or not (table 6.22).

Source	DF	Sum of squares	Mean Square	F test
Regression	7	29.673	4.239	14.838 p<0.01
Residual	520	148.55	0.286	
TOTAL	527	178.223		

**Table 6.22 Analysis of variance table for multiple regression**

The F value was highly significant at  $p<0.01$ , therefore it was unlikely that the relationship between the seven variables and total mean RUS had occurred by chance.

Whilst there were a number of other variables that correlated individually at a level of significance with total mean RUS, they were not entered into the multiple regression equation as the variance they explained was already explained by other variables in the equation. Two of the individual variables that had significant correlations with total mean RUS had to be left out of the analysis due to large amounts of missing data These were the proportion of 1st level nurses in the hospital where the nurse worked ( $n=514$ ) and the hours spent studying each month off duty ( $n=580$ ). The effect of these variables in a group with the other variables entered is therefore unknown.

In this study a large number of variables were tested for their relationship with total mean RUS. Black (1999) suggests that the alpha significance level be reduced to 0.01 when there are a large number of tests, therefore some caution is required when

interpreting tests at the 0.05 significance level. However, many relationships in the study were at a significance level of 0.01 and below. The sample size had been calculated using power analysis for parametric tests yet most of the tests carried out were non-parametric. The power of the non-parametric tests has been assumed to be similar to that of parametric ones. Black (1999) argues that the power of non-parametric tests may actually be higher than parametric when used appropriately.

## **RESEARCH UTILISATION AND THE INFLUENCING FACTORS IN THE INTERVIEWS**

Research question three asked: 'How do associated 'influencing' factors exert their influence on research utilisation?' This question was answered by analysing the findings of interviews with nurses which sought to elicit the nurses' own explanations of the relationships between significant factors identified and the utilisation of research.

### **Selection of Nurses for Interview**

Nurses were selected to represent those who had a high total mean RUS and those who had a low total mean RUS. The views of the Directors of Nursing for the hospitals were also sought in terms of how they perceived that they enabled research utilisation.

The high and low scoring hospitals, wards and individuals were examined to see if they were congruent. The highest and lowest scoring small medium and large hospitals (hospital mean score weighted to individual nurse level) were identified (see Appendix 18). Nurses with a high total mean RUS ( $>3.46$ ) and those with a low total mean RUS ( $<1.86$ ) were identified. Wards with a weighted total mean RUS above 3.00 (the top 24 or 15.9%) and those with a weighted total mean RUS below 2.30 (the bottom 21 or 13.9%) were identified. Sufficient individuals and wards deemed as high scorers came from high scoring hospitals and low scoring individuals and wards from low scoring hospitals to support the selection of the hospitals. One hospital had quite a high hospital score overall but also had several low scoring

and individuals. This hospital was also selected as it demonstrated a slightly anomalous situation. A wide geographical spread and spread of hospital type was achieved.

Hence, individual nurses were selected from within seven hospitals, mostly from high and low scoring wards. An attempt was made to select nurses from wards where there had been a good response rate and where the Charge Nurse had responded. If a choice of wards still remained then a balance of medical and surgical wards within the hospital was sought, and the difference between the Charge Nurse score and the other nurses in the ward considered. Sampling thus ensured that nurses who scored higher and some who scored lower than the Charge Nurse were included. A total of 29 ward nurses were identified for interview. Two nurses from each of two wards from each hospital were selected (apart from hospital code no. 206 where one further nurse from another ward was also selected). Where possible the Charge Nurse was chosen along with one registered nurse, giving a total of 13 Charge Nurses and 16 registered nurses for interview.

### **Content of the Interviews**

Both Directors of Nursing (or an appropriate Senior Nurse) and the ward nurses were to be interviewed. The findings from the quantitative data, which were explored with the Directors, were almost exclusively at a hospital level whilst those explored with the ward nurses were mostly factors at the ward and individual level.

A structured interview format seemed most appropriate for the interviews so that the identified quantitative relationships could be explored and comparability ensured between interviews. The structured interview also enabled the length of the interview to be more closely controlled and for interviews to be conducted by a research assistant. In order to keep the length of the interviews with the ward nurses to less than 30 minutes, it was not possible to ask for suggestions and explanations about all influencing factors identified. Those variables that were significantly associated with total mean RUS were selected as were those identified through the multiple regression analysis. The variables were grouped into common areas and questions constructed for both ward nurses and Directors of Nursing. The schedules were peer

reviewed and then redrafted. They were then piloted with 2 senior nurses and 4 ward nurses from the hospital that had been used previously for pilot work in the study (this hospital did not take part in the main survey). Further adjustments were made to give the final schedules, which are given in Appendices 19 and 20.

### **Conduct of the Interviews**

All the Directors of Nursing of the seven hospitals selected for interview agreed for their nurses to take part. In almost all cases, the Director agreed to be personally interviewed. However, in two of the hospitals, the Directors thought it was more appropriate for one of the other Senior Nurses to be interviewed, as they had been the main contact point at the hospital during the study. These Directors also felt that research and development was more clearly part of that Senior Nurse's remit. No distinction is made between Directors and Senior Nurses in the reporting and analysis of the data (the term Director is used to encompass both).

Of the 29 ward nurses selected for interview, 19 agreed to be interviewed and ten were either not available (long-term sick leave or maternity leave or having left the ward) or refused to be interviewed. Re-sampling of nurses within the same wards led to a further 15 nurses being identified. Of these nurses, only five agreed to be interviewed whilst the other ten refused or were not available. This resulted in a total of 24 out of the 44 selected being interviewed (see Appendix 18 for wards and scores). The non-availability and refusal was distributed fairly evenly between the high and low scoring hospitals. Of the 20 who were not available/refused, ten were from low scoring hospitals and eight from high scoring hospitals (the remaining two were from the one hospital that had both high and low scoring wards.)

All interviews were tape-recorded with the agreement of the interviewees. Notes were also made after the interview of any significant comments made outwith the taped interview and of any general observations in the ward areas. Interviews with Directors were conducted in their offices whereas interviews with ward nurses were usually conducted in a ward office. Interviews were arranged for the end of a nurse's shift but availability was not always assured. More than one visit to some of the hospitals had to be made to conduct some of the interviews. One nurse elected to be

interviewed at home as she was on maternity leave. Interruptions were a problem in some of the interviews but the convenience of conducting the interview at the workplace was thought to outweigh this problem.

## **Analysis**

The interviews were transcribed into a database with the response to each question constituting a field. The interviews were not transcribed exactly word for word, as superfluous comments and opening or closing remarks that were not in direct response to the question were excluded. For instance, comments such as “well let me think, yes I suppose you could say that” or “is that OK, does that make sense to you?” These types of comments were included when part of a sentence in which comment or explanation was being offered. In order to give the reader an appreciation of the interviews, one has been transcribed in full and is included in Appendix 21. The method of transcribing was checked for the introduction of bias by both the author and the research assistant conducting the process on all interviews. Any areas of disagreement were reviewed and revised.

Firstly the ward nurses' interviews were analysed. Each interview was studied in its entirety initially and then by looking at the responses of all nurses to each question. It was intended to analyse the interviews by a content analysis of each question to look for explanations of the relationships in the quantitative data. However, many nurses talked about a wide range of issues in response to the questions with similar issues arising in response to a variety of questions. The original plan of analysis was therefore abandoned and an editing analytic style using category development employed (Polit and Hungler 1997). After reading and re-reading the interviews, categories were created to reflect the issues raised. The data were then coded according to the initial categories developed. The categories were also organized into an initial grouping of similar concepts. During this process, further categories were developed and refined. Similarities were sought in the data as well as contrasts particularly between nurses from high and low scoring hospitals. Once an initial set of categories had been developed, a reliability check was undertaken with the research assistant replicating the coding of a small proportion of the data. Further refinement of the categories was required to ensure exclusivity of the categories

followed by further replication to test for reliability. Reliability was assured on almost all of the coding for four of the interviews chosen at random.

Further development of the categories and their conceptual groupings was required because there were a large number of categories and some superfluous data that did not add significantly to an understanding. Some categories were then merged whilst a few were discarded. Larger conceptual groups were created and a more in-depth explanation of the data achieved. At this point the data from the Director's interviews were being analysed alongside that from the ward nurses. The data from the Directors' interviews were handled in the same way to that of the ward nurses. Several similar categories emerged, whilst some appeared identical and a few unique. When data from both the Directors and the ward nurses were seen together under the conceptual groupings, it was evident that a wider understanding of the concepts could be achieved. The data were therefore combined around the conceptual categories or themes. Although many iterations of the process of analysis have been described, only the final stage is presented here.

### **Nursing Directors' Definition of Nursing Research**

The interviews with the Directors of Nursing opened by asking what activities they considered to be nursing research and if they could give any examples. This was to check whether their comments in the interview actually did relate to nursing research or whether their definition was somewhat different and hence the results of the interview may not have been valid for the research question. Concerns were that Directors might confuse the activities of research and audit, refer only to the conduct of new research rather than the utilisation of research or confuse involvement in collecting data for medical research with nursing research.

The Directors appeared not to confuse nursing research and audit activities, nor to confuse the collection of data in medical research with the activity of nursing research.



“Lots of nurses say they are involved in research but they are simply collecting data for medical staff. There is a lack of understanding about what’s research and what’s audit.” (Director 5)

“So I try to differentiate between research and audit, and in terms of audit there is a tremendous amount going on. In terms of what I would regard as the purist research, very little, ...medically dominated and perhaps a contribution to some research projects that are going on, rather than actually leading to projects specifically here.” (Director 1)

Many Directors exemplified this point further, however most felt they could only give one or at most two examples of nursing research activities in the hospital.

"One of the Staff Nurses in the medical ward runs the rehab clinic for cardiac patients and looks at the success of the programme. It's linked with — (a larger hospital). It's very much a nursing led project." (Director 2)

Some of Directors from the lower scoring hospitals had more difficulty with this question and talked about courses and literature that had been prepared using nursing research. Yet, they did not confuse research with audit at any point.

“We did a lifting and handling course which all nurses did and it was research-based.” (Director 7)

“One nurse looked at cancer care and wrote an information pack ...it included a lot of references.” (Director 6)

## **FINDINGS OF THE INTERVIEWS**

The analysis of the interview data (in light of the survey data) led to research utilisation being examined as an integral part of accountable practice with research providing the knowledge or evidence on which to base care.

In accountable practice, one may be called to account as an individual for one’s actions. A nurse must therefore be able to justify any actions carried out. The UKCC (1992) states that nurses must maintain and improve their professional knowledge, and the strategy for nursing research proposed by the Department of Health

(Department of Health 1993) reiterates the importance of reliable research to provide the knowledge base for accountable practice. However, knowledge alone is insufficient for accountable practice. The nurse must also be held responsible for the area of practice and be given the authority to carry out the care. Once authority has been provided, then the nurse has the capacity for self-determination or autonomy. Autonomy, responsibility for care and the knowledge on which to base practice are the key components of accountable practice.

Firstly the themes of responsibility, autonomy and knowledge for accountable practice are introduced. Then each are explored in some depth in terms of how the theme emerged from the data and how it relates to research utilisation in nursing. Finally the influence of the Charge Nurse and the Director of Nursing are examined in terms of how they effect research utilisation by nurses.

Issues around the theme of accountability were raised in response to a wide variety of questions by both ward nurses and the Directors. It was a recurrent theme for the vast majority of higher scoring nurses who demonstrated an acute awareness of accountability associated with the independent practice of a professional. The importance of this issue was demonstrated through the detail and passion with which the nurses spoke, and also by often citing aspects of autonomy as most the important factor for them to develop research utilisation,

"To give staff the responsibility to make decisions. To have control of a certain area to do it more effectively." (Medical Staff Nurse 1)

"The learning environment and the staff, and being given enough free rein." (Surgical Charge Nurse 2)

Autonomy or the ability to self-determine action results from the devolvement of authority for action. Many nurses were frustrated at their lack of authority in relation to clinical decision making.

"Imposed change is usually resisted. If someone hands out statements or orders, it often comes like that without explanatory pages; some nurses resent this and see the system as hierarchical. Their autonomy and individuality is

minimised. They are not being allowed to participate in decision making. It's important to involve people in decision making." (Surgical Staff Nurse 10)

Along with autonomy, the nurse must be made responsible for actions if one is to be held accountable. Responsibility is usually construed as being to peers, managers or the profession yet nurses in this study talked most often about responsibility to their patients.

"The patient is not just a diagnosis but becomes a person, they are much more important and it is more ethical to treat them as a whole person. I feel a real sense of responsibility to the patients as individuals. I want to give the best to them rather than just deal with their symptoms....It's up to us to find out what's the best to do for them." (Medical Staff Nurse 1)

The nurses were also clear that they had an obligation to be able to justify their practice, to have the requisite knowledge on which to base practice and thus make use of research.

"If you are making decisions on people's care you have to be able to justify it." (Surgical Staff Nurse 12)

"You have to be able to back up the decisions you are making." (Medical Staff Nurse 15)

### **Gaining the Knowledge for Research Utilisation**

The sources of knowledge for practice discussed by the nurses were mostly education and reading. The nature of education seemed important with different outcomes from different forms of study. The value of research courses and being taught a topic from a research basis were discussed but often seemed to be part of a higher education experience. Reading was discussed in terms of the motivation to read and the value placed upon reading in the ward. The support for education from the Charge Nurse and the Director appeared crucial for nurses to be motivated and to attend any courses.

#### *Education*

Pre-registration training (1982 or earlier programmes) alone did not seem to produce lifelong learners who would continually seek out new knowledge and the

justification for practice. In fact the effects of pre-registration training were offered as explanations for continued ritualistic practice. Several interviewees suggested that nurses follow the way they have been taught or observed in their training and do not question it again. One higher scoring nurse said:

"Most nurses carry out a procedure because they've been taught it in training or in the wards so they think it's the correct thing to do but that's not the case here." (Medical Staff Nurse 1)

The lower scoring nurses seemed to support this assertion

"I would follow a procedure as I was taught in my training." (Medical Staff Nurse 19)

The poor effect of local policy or procedure was acknowledged by lower scoring nurses as they did not question their practice and continued to follow procedures learnt in training.

"Someone showed you that way, the way you were trained, but now when policies are updated frequently, you don't look at them so you can be out of date." (Surgical Staff Nurse 17)

"Everyone up here has trained in a different place. We were taught totally differently. As long as the end result's the same, we tend just to do what we feel most comfortable with." (Surgical Charge Nurse 22)

However, there was a general sense that there was an increasing value being placed on academic study in nursing, and that nurses from the new 1992 Diploma programmes (P2000) presented a new state of affairs.

"Nurses have only just begun to be encouraged to educate themselves more and become more academic." (Medical Staff Nurse 4)

"There's more emphasis on academic nursing now." (Surgical Staff Nurse 1)

Nurses talked in particular about the benefits of the new Diploma programme and in going on to study at Degree level.

"The recently qualified ones are far more aware of research, they are brought up with it now. Going on to further education will certainly make a difference." (Surgical Charge Nurse 2)

"The new junior staff with the diploma are more attuned to research because of their training – it involves more research." (Surgical Staff Nurse 13)

Almost all the comments that were not in agreement with the survey findings related to the more highly qualified and nurses of a higher clinical grade having a higher level of research utilisation.

"I would have thought the more senior nurses would have been more stuck in their ways." (Medical Staff Nurse 16)

"No, not really. D grade staff nurses are at the beginning of their careers and are quite likely to read nursing journals. They won't have post basic qualifications but the D grades will be most up to date with their knowledge." (Surgical Charge Nurse 2)

However, it seems that around the time of the interviews the first group of Diploma students from the 1992 programmes had come into posts as Staff Nurses. These nurses seemed to create quite an impression. (The interviews took place around 6–8 months after the survey).

"Not now, because younger ones are trying to develop themselves and with P2000 nurses coming through, they see they have to develop themselves. Jobs are asking for more qualifications than RGN now. Many who are higher up are not going to progress any more so they don't bother trying to develop." (Medical Staff Nurse 3)

"No because now we find the P2000 nurses are very research orientated. We didn't get that in our training." (Medical Staff Nurse 1)

One nurse suggested that whilst knowledge levels were high when first qualifying, that ongoing study was necessary to keep up to date.

"When you do your training you have to do so many things you have quite a high knowledge that's up to date. You get a bit lazy after a couple of years so you need to go to study days and courses." (Surgical Staff Nurse 17)

In particular, the opportunity to study research was thought to be helpful in reducing fears about research, enhancing knowledge, and learning how to study. One lower scoring nurse said:

"Here, the barriers go up when they see research. I don't know what it is. If they have studied more then they won't be as afraid of it." (Medical Charge Nurse 23)

Whereas one higher scoring nurses said:

"I've been on research awareness courses which were good. Doing courses is helpful because you become used to studying." (Medical Staff Nurse 14)

"When you do courses it makes you more aware of things, you've got to read and back up what you're saying with references." (Medical Staff Nurse 9)

The higher scoring nurses were also able to articulate the effects of being taught a topic from a research base; lower scoring nurses were not. There was a consensus that being taught from a research base enabled nurses to learn, how to question, seek out evidence and evaluate the evidence for practice.

"We were told why and who had proved this. We were given literature reviews and references which we had to follow up and present. You remember yourself and you don't rely on asking others but you go and look it up for yourself." (Medical Charge Nurse 3)

"It stimulates you to read more and you really remember what it is you were being taught about." (Medical Staff Nurse 16)

"It affects the way you work. I'm more likely to use journals now rather than the big texts." (Surgical Staff Nurse 4)

The questioning approach or demand for rationales was clearly part of being taught in this way.

"It makes a difference to how you think, it makes you look at the reasons behind things." (Surgical Charge Nurse 8)



One Charge Nurse felt that this questioning and seeking of rationale would also lead a nurse to challenge current practices or proposed changes as nurses become more research minded.

"A nurse considering using, or one who is using research isn't going to accept anything that comes from whatever level without questioning it." (Surgical Charge Nurse 2)

It could be argued that nurses with a questioning approach are the ones who put themselves forward for research courses or higher education that uses research-based teaching. This may or may not be the case, but at least one nurse suggested that it was the effect of teaching that had altered her way of thinking.

"Now you are made to seek out the research papers as part of courses. When you get used to the idea it is better but I had to change my attitude and get used to it." (Surgical Staff Nurse 18)

The value of research-based teaching seemed to be that it stimulated a questioning approach and teaches skills of appraisal. Several higher scoring nurses who had completed degrees elaborated further on learning not only about process and content, but the effect this had on them and their practice.

"I've had research theory in my degree studies and until then I really didn't appreciate it, how much there was to it. You need to be encouraged and shown how to do it properly. If you're not educated it's easy to slip into your own ways." (Surgical Charge Nurse 8)

Conversely, study days appeared to be of little value to the nurses.

"You are more likely to go on study days but you don't have to do anything or even think if you don't want to, but in long-term degrees and diplomas you have to do assignments and you pick up lots of things because you're reading more." (Surgical Staff Nurse 17)

"Going on study days is good for morale more than learning." (Medical Staff Nurse 24)

Study days therefore were not seen as engaging and helpful for staff development in the same way as accredited courses.

### *Reading*

With regard to knowledge gained from reading, the higher scoring nurses offered most comment as they had more experience of a range of nursing journals. A few nurses could not offer any ideas about Professional Nurse and 'other' journals, as they had no knowledge of them. Almost all comments relating to nursing journals arose from questions about the association between reading Professional Nurse and some of the more specialised journals and a higher level of research utilisation. The nurses felt that Professional Nurse had more in depth clinical articles that were at a level that was useful to them. Only one Director made any specific comment about the quality of the nursing journals and this supported the assertions made by the nurses quoted below, that the popular press was often of a poor quality.

"The British Journal of Nursing and Professional Nurse looks at nursing practice. Nursing Times is trying to do this but tends to be very basic like a woman's own! Nursing Times and Nursing Standard should be more for nursing auxiliaries." (Medical Charge Nurse 3)

"Professional Nurse – yes. I read this one the most. When you qualify, you need to find out about the basic principles of practice which it's good for. It looks at things you do every day and not reporting about unions which doesn't help you care for a central line." (Surgical Staff Nurse 17)

"You get more on up to date clinical procedures in Professional Nurse." (Surgical Staff Nurse 10)

The clinical focus was clearly important for the nurses, as was the perception that the journal was particularly relevant to medicine and surgery.

"It appeals more to nurses in general medicine and surgery." (Surgical Charge Nurse 9)

The 'other', more specialised journals seemed to be used more as a reference source and were thought to be particularly valuable in being so specialised.

"They are more specialised, they aim for the niche in which you're working."  
(Surgical Charge Nurse 8)

"Many are a special interest so you can get one that's got specific things in for you ward." (Surgical Staff Nurse 13)

There was a suggestion that the nurse who was using such specialised journals was already highly motivated to search them out and may be doing so as part of a course.

"There are more specific journals, so when you are reading them, you are researching a specific subject, usually that you can find from a key word search from the library." (Surgical Staff Nurse 22)

There were also several comments specifically about the reporting of research and research-based articles in Professional Nurse and some of the more specialised journals.

"There's more research in them. They publish research papers or extracts from them. From articles, we've written to people for more information on what they've done." (Medical Charge Nurse 3)

"Professional Nurse puts across its research-based articles better." (Medical Staff Nurse 15)

The nurses seemed to want clinically and research-based articles, clearly written at an appropriate level to inform their practice. Other specialist journals seemed to be used more as reference sources but were thought to be valuable for this. Whilst the lower scoring nurses had less to say about journals, the sentiments that were expressed were in agreement with those of the higher scoring nurses.

A wide range of comments about reading came from ward nurses in response to the question asking their views on the finding that nurses who read more off duty rather than on duty were able to use research in their practice more. Many talked about it being too busy on the ward to read and that it was much easier to read in a more relaxed and quieter environment away from the ward.

"At home you relax and take things in more. You don't have time to read on duty and you can't concentrate." (Surgical Charge Nurse 9)

The majority of nurses reported a frustration with the lack of time for reading during the working day. Only one of the higher scoring nurses mentioned that they were given time in the working day to go to the library. The result of this was thought to be that only those who were more highly motivated would read off duty and in turn, their motivation would lead them to bring their new found knowledge back to the ward.

"If a nurse is reading in her own time she is interested and will use it to change her practice." (Surgical Staff Nurse 4)

"If you make the effort to read then you are likely to make the effort to use it too." (Medical Staff Nurse 6)

The nurses did recognise that not everyone was so motivated.

"There's no time to read on duty. A lot will say I work my hours which I'm paid for and then I go home and that's my home life, which you can understand. So the ones who do go home and read are the ones who want to find out more, they are going to bring back more." (Medical Staff Nurse 3)

Perhaps there needs to be a compromise between encouraging nurses to be motivated enough to do some reading off duty and providing some opportunities for reading on duty, but away from the ward. This in itself would demonstrate to others the value of reading and perhaps would also be seen as a reward or encouragement. Providing time for reading within the working week was mentioned by one of the Directors from one of the higher scoring hospitals.

"I truly believe in getting people out of their areas so they can concentrate, they have to be able to have time to think." (Director 1)

#### *Support for reading and studying*

Support and encouragement for reading and studying were seen to come from both the Director of Nursing and the Charge Nurse and be crucial to providing ongoing motivation to change practice. The sense that being sent on a course was a form of reward or encouragement was mentioned by several nurses. A couple of nurses

mentioned that funding for courses and time off was particularly difficult to achieve. This could be seen as a lack of reward or that little value was being placed on staff development; this seemed to be demotivating for the nurses.

"It doesn't help if you can't get away for courses or you don't get the information. You can get a lot from reading but when you go on courses, it's a form of encouragement." (Surgical Charge Nurse 2)

The Charge Nurse was also mentioned in relation to facilitating and supporting staff to gain educational opportunities and to put new knowledge into practice.

"Sister's good at getting us on study days, then we bring it back to the wards and talk with the staff about it." (Medical Staff Nurse 1)

"She [Charge Nurse] expects a lot of you and encourages you....she puts together small groups to look at things." (Surgical Staff Nurse 7)

"The person at the top has to be seen to be motivated and be interested in research, and encourage someone to put forward ideas who has come back from study days. If you shoot them down in flames then they won't bring ideas forward." (Surgical Charge Nurse 9)

#### *Resources for learning in the hospitals*

The resources for learning within the hospital were frequently mentioned by nurses. The higher scoring nurses talked about not only the availability of libraries, but specialist nurses, and education and library staff who acted as 'information brokers' for them.

"The librarian will copy papers and send them over. We get reading lists monthly and that triggers off what we send for." (Surgical Charge Nurse 11)

Almost every Director identified the library as a useful resource for nurses, although one Director from a lower scoring hospital seemed rather over adventurous in what was thought possible within a library.

"We have a good library with computer links to the college because we have the students from there. It keeps everyone on their toes. All the latest things and research are on display in the library." (Director 7)

Librarians were most frequently mentioned as being those who sent round lists of papers and journal articles. Others mentioned journal clubs.

"We get surgical articles from the journal club and take them home."  
(Surgical Staff Nurse 13)

Not all nurses were so fortunate. One lower scoring nurse said:

"It would help if there was more literature available, or someone finding it for us – we could really do with that." (Medical Staff Nurse 19)

One of the higher scoring nurses summarised the need for education resources thus:

"Information has to be on site and easily available, a supportive team, ongoing education and someone to help find things in the library." (Surgical Staff Nurse 4)

Helping nurses to cope with the mass of information available – to find relevant and worthwhile material appears to be an important task.

#### *Discussion of research with peer group*

Whilst gaining access to new knowledge is essential, the nurses mentioned that in order to think about its relevance to practice and begin to evaluate its usefulness for practice, discussion with other registered nurses or peers was necessary.

"It's very difficult to read on duty. You're always aware of what's going on around you and answering the call bells. It's much more effective to get off the ward for half an hour to read. When you come back to the ward you need to discuss it with others, and if it seems OK, then maybe you'll try it."  
(Medical Staff Nurse 16)

The lower scoring nurses found low levels of trained nursing staff a problem in this respect. The lack of trained staff was often mentioned as the hospital or ward level factor that most inhibited them in developing research utilisation.



"The main problem is introducing the research, not finding out about it as my skill mix is not great. We have a lot of auxiliaries and not enough trained staff." (Surgical Charge Nurse 20)

All of the Directors from the higher scoring hospitals and one from a lower scoring hospital felt that, when there was a higher proportion of trained nurses, there were more opportunities for discussion, mentorship and peer support.

"I think there should be a high level of trained nurses as opposed to untrained helpers... I've strived hard for our levels of trained staff to untrained and I think our levels are good. If there are more trained nurses there are more opportunities for mentorship, to discuss professional issues in relation to care." (Director 2)

Such a strong commitment to ensuring a higher proportion of trained nurses by the Directors from higher scoring hospitals was typical, as was their insight into its value. A further suggestion supported by several Directors was that when there was higher proportion of trained staff, the service was more efficient and so perhaps creating more time and further opportunities for discussion.

"The more trained staff the more able they are to work on their own so it frees you up. They have more time to be able to look at research." (Director 5)

#### *Types of knowledge in medical and surgical wards*

An important finding from the survey was that nurses in surgical wards scored consistently higher than those in medical wards. This was so even when removing all of the nursing practices in the survey that one might argue were biased toward surgical nursing. The nurses offered a range of suggestions as to why such a discrepancy might exist. Many found the difference surprising and had to think for a little while before offering any thoughts on the matter. Some nurses had no idea why surgical nurses should score higher than medical nurses. In general, it appears that the knowledge for surgical nursing may be more directly applicable than in medical nursing. There was a view that in surgical nursing, there were more research and technological advances than in medical nursing, and that there were more discreet skills which were more amenable to research and that could be directly applied.

"There is more hands on clinical tasks in surgery like dressings and injections. They are practical subjects that you can study more easily."  
(Surgical Staff Nurse 10)

"There's more research around that you can use in the surgical wards."  
(Medical Staff Nurse 16)

Medical ward nursing was thought to be more difficult to define.

"Surgical nursing is very logical and organised but medical is not so straight forward. There's so long to diagnosis in medicine." (Surgical Charge Nurse 11)

"Medical is more drug orientated. The doctor decides the medication. In surgery we do a lot of wound care and more practical hands on care that can be done for a surgical patient rather than in medicine where there's a lot more talking." (Surgical Charge Nurse 9)

The Directors were in agreement with the ward nurses that surgical nursing tended to be more defined, that there was more research in surgical nursing and that the outcomes were easier to apply.

"In surgery it's a much more defined speciality. Patients come in have an operation and go out. There's a lot more variables in medicine." (Director 3)

"A lot of the research is surgical based. There is a beginning and an end so it's easier to get outcomes than is medical." (Director 4)

It seems then that surgical nursing involves more technology than medical nursing. The nurses felt that advances in technology, in part, drove the need to be up to date and to seek out research to support their practice.

"There's more advances in techniques and dressings so you have to keep up to date." (Surgical Staff Nurse 18)

"Techniques are changing in surgery but that's not so much the case in medical." (Medical Staff Nurse 6)

However one of the higher scoring medical nurses suggested that there were advances in that area too.

"It's acute medicine here and we also get a lot of leukaemia patients. Leukaemia is very much research-based." (Medical Staff Nurse 1)

Perhaps these nurses were also more accustomed to changes in practice and also did not perceive technological advances as threatening their previous practice. It may be that when medical care relies heavily on research, that a climate of seeking out supporting evidence may also exist within nursing care. The variety of care encountered in medical and surgical wards was thought to affect levels of research utilisation.

"The patients make a difference. Medical wards have such a variety of patient care but we have general pre and post op care patients although some are treated conservatively." (Surgical Staff Nurse 13)

The argument seems to be that there are benefits in specialising. This may also explain the high level of research utilisation by the nurse working in a ward specialising in leukaemia.

### **Responsibility For Research Utilisation**

Responsibility for actions appeared to come from a sense of personal responsibility on behalf of the nurse directly to the patient. This sense of responsibility was mainly manifest when a system of organising nursing care in the ward enabled individualised care and led to nurses feeling a strong sense of personal responsibility for patient outcome. Conversely, task allocation was felt to be boring and demotivating for the nurses and to lead to a non-thinking performance.

"If you're doing task oriented work it becomes a plod. Doing a round for everything is boring in the extreme." (Surgical Charge Nurse 11)

"When you're working with patients as individuals you have to think, but you don't have to if you are just following the routine. You don't have to use your brain and find out why." (Medical Staff Nurse 16)

It seems that task allocation led to a ritualistic, unthinking performance and was demotivating for nurses. Nurses would then not be stimulated or motivated to think

about and question patient care in this type of ward. Such an unquestioning approach appeared to hinder change to research utilisation.

"We tend to do what we've always done in the past. If it's worked then why change?" (Surgical Staff Nurse 12)

Primary Nursing was mentioned by several of the higher scoring nurses as one way of working that encouraged them to think and question practice, and to deliver researched based care.

"When I became a Primary Nurse, then what goes on in my team is my responsibility and you need research to support what you want to do. When we change things it's nothing personal but it's for the good of the patient....We can use research more because you feel more responsible for what you're doing so you have to go and look things up more." (Surgical Staff Nurse 4)

A system of delivering nursing care that promotes individualised care seems to stimulate nurses to question and justify their practice.

"If you think what the individual needs then you think deeply. You don't think deeply or see the benefits when you just do tasks or do things automatically." (Surgical Charge Nurse 9)

One lower scoring nurse clearly felt that individualised care was not being practised. It seems that because the nurses did not feel they were making decisions about care, they felt a lack of responsibility.

"Individualised care, well it doesn't really apply here at all, but if you are responsible for that patient's care then you have to take more responsibility in you decisions." (Medical Charge Nurse 23)

Nurses considered the advantages of research for practice when they felt responsible for an individual patient's care. These were in the main orientated toward patient benefit but nurses also talked about the applicability of research in more general terms.

"What's most important is if it helps the patient." (Surgical Charge Nurse 9)

"There's got to be a realisation that it can help you in your work and your patients." (Surgical Staff Nurse 13)

"They've found that basing care on research can actually make things better and easier so now they want to continue this." (Medical Charge Nurse 3)

One nurse gave a clear example of how directly applicable research with clear patient benefit was highly valued and how it might stimulate the use of research in other areas.

"If it can be demonstrated to nurses that there are benefits to patient care such as PCA, then practical research which says something positive, that the patients are benefiting, would stimulate you to look at other aspects of nursing. Sometimes research can be meaningless bits of paper. If nurses can see a practical benefit and outcome, then they will be more likely to use it." (Surgical Staff Nurse 10)

Directly applicable research was thought to be most useful whilst it would seem that in the reporting of research the implications for practice have to be made quite clear. The ability to 'see' the effect on patient outcome also seemed to be important, therefore evaluation of any practice innovation provides not only information on what effect the change has, but provides encouragement to the nurse if the outcome is positive.

#### *Ownership of policies and procedures*

A sense of responsibility for practice also seemed to develop from involvement in, and ownership of, the development of local policies and procedures, and changes in practice. Almost every nurse talked about the importance of ward nurses having ownership of changes in practice. Not only did the nurses feel resentment and demotivated when changes were initiated by senior managers, but they also argued that the changes were often not appropriate for their ward and their patients. The survey findings demonstrated the failure of centralised policies and procedures in influencing practice. The nurses were not at all surprised to hear in the interviews that the existence of a policy or procedure made little difference to practice. Many nurses suggested that policy and procedure manuals were not looked at so they were not really aware of their contents.



"The transition between being a student and a staff nurse is not smooth. You don't get introduced to the policies. There's no time to read through them." (Surgical Staff Nurse 4)

"When I started I was given a huge book of procedures. You just skip through and pass over what doesn't apply to your ward. There's just too much. It's hard to apply." (Medical Charge Nurse 23)

Poor introduction to policy and procedure when starting a new job may be partly to blame with an ongoing problem of lack of time to read through them. Some of the lower scoring nurses suggested that this led to them making their own individual decisions about patient care.

"[The policy/procedure manual] It's about 3 inches thick and not having trained here... I've picked them up from other hospitals too. So I usually just decide what I think is the best thing for the patient." (Surgical Staff Nurse 17)

"We don't know the policies and there's always new ones being added and added. You have to rely on your experience. You just know what to do." (Medical Staff Nurse 24)

Directors from the lower scoring hospitals seemed to concur with their ward nurses reporting the greater influence of socialisation over policy and procedure.

"They learnt by fitting in, not by reading policies. They went on what sister liked....Unless the climate is right they are not going to be able to change that." (Director 6)

"Sometimes we practice based on what's been done before, learnt from an older member of staff....They don't refer to policy manuals." (Director 5)

'Ritualistic practice' or doing things in a set way was mentioned by many of the ward nurses when trying to explain why the existence of policies and procedures for practices did not appear to be linked to greater use of practices. Some of the nurses also used 'Ritualistic practice' to explain why nurses often believed there to be a policy supporting their use of a practice. This may be in part grounded in a belief that the way it has always been done is the way 'the hospital' wants it done.



"It's tied in with the belief that this is the way we've always done it so there must be a hospital policy." (Surgical Staff Nurse 22)

A couple of nurses suggested that nurses followed a traditional practice rather than a prescribed procedure on occasion in order to save time. This would suggest that any new practice or change in practice may need to be perceived as taking less time than, or a similar amount of time to, the established practice. Those that save time may be more readily adopted. These findings concur with the results of the survey in the minimal effect of hospital policy and procedures on ward practice. Unless the nurses were encouraged to question their current practice, they would not perceive a need to change from the way they were taught in their initial training.

Some of the higher scoring nurses took a quite different approach to the problem. They argued that not only was the format of the manuals unwieldy, but that the policies and procedures were out of date.

"Our procedure book is so far out of date that we couldn't use it. It's never been updated. You tend to keep up to date by looking at the journals." (Surgical Staff Nurse 10)

"They're not updated and may not be based on research. They tend to get just stuck in a folder and left there." (Medical Staff Nurse 16)

The nurses were of a consensus that if they were not involved in introducing a practice change then feelings of resentment and sometimes anger resulted.

"You think, what do they know. It makes me angry that changes have been put forward without asking you what you think and with no chance to discuss things." (Medical Staff Nurse 6)

"You feel how dare they tell me what to do, them out there!" (Surgical Staff Nurse 4)

Some nurses said it made them feel worthless and they became demotivated.

"If it comes from the top, you know you have to do it whether you agree with it or not. You know there's no point trying to argue with it so you start to ask what's the point in trying." (Medical Staff Nurse 15)

"If the people higher up are making all the decisions you're just going to come in, do your work, and go home." (Surgical Staff Nurse 18)

When responsibility for elements of clinical practice is not invested in the ward nurses, a general lack of motivation and a detachment results. Yet, the higher scoring nurses talked about taking responsibility for practice and of nurses working in groups to develop ward-based protocols.

"We have our own protocols which we developed. We find out about the research ourselves. Ownership really is important. Protocols here tend not to be used by the people who didn't have any input to developing them." (Medical Charge Nurse 3)

Several higher scoring nurses mentioned that the impetus for ward-based procedures and policies had come from the Charge Nurse yet they had involved all nurses in their development. Nurses thus developed a collective responsibility for a dynamic set of research-based protocols.

"Here sister encourages us to look at policies and procedures so we've all contributed to making them up." (Medical Staff Nurse 1)

The nurses argued that by developing ward-based protocols, their nursing practice took into account local expertise and was more appropriate for their patients.

"Too often policies from above are from people who aren't practising. They have got knowledge and experience but are not actually doing the job." (Medical Charge Nurse 3)

"They've (nurses) just been told what to do by people who are not working here. They (managers) don't know what we do so they (nurses) ask why should we have to do this to make things better for them (managers)." (Surgical Nurse 13)

The Directors from the higher scoring hospitals were quite critical of policies and procedures as a top down method of dictating practice.

"Most are like an idiots guide on what to do. Now they are more aware of their professional accountability and should really only be a reference guide. They ought to be extinct. Nurses don't refer to them." (Director 2)

Implicit in this statement is a belief in individual responsibility for clinical practice on the part of each registered nurse. Another Director from a higher scoring hospital was equally critical of policies and procedures, but argued for group ownership and development by the clinicians. The Director had a strategy to develop co-ordinate and pilot these efforts, including a clear differentiation between policies, protocols and procedures.

"I think this whole business of policies and protocols needs to be addressed....There is a difference to all of those things and I think it is important for us to differentiate and I think policies are not what you need for clinical practice. Protocols are to do with, I think, this multidisciplinary approach to how you deal with a particular situation. We have for example protocols for dealing with different conditions. [Goes on to cite examples and how they are used.] We've audited them before, actually after the pilot, and it came out that they actually were used and they were found to be extremely useful. All the nursing procedures, catheterisations and all sorts of things like that, they have all just been updated in a particular format and that's just about to go out once we have checked it over. But it takes such a long time to do that. We've got to find a better way to do that." (Director 1)

Nurses from this hospital had often mentioned their involvement in drawing up nursing procedures and argued this to be important for ownership and the input of clinical expertise.

"We developed our own wound formula and looked up the research for that. It involved nurses and pharmacists from across the hospital. It's for the whole hospital and everyone knows about it. It's well used in the surgical areas but not as well in some of the other wards. They do know exactly where to find it." (Surgical Staff Nurse 13)

Creating hospital-wide, research-based up to date policies and procedures with the involvement of ward nurses appeared to lead to a much wider adoption. There was not only a sense of ownership but also a real value placed on the policies/procedures as having been drawn up by knowledgeable ward nurses using current research.

None of the lower scoring nurses talked about developing their own protocols apart from one, who said they had just begun to do it. It seems that group work by nurses to develop their own protocols encourages nurses to not only seek out relevant research but also enables the protocols to be put into practice.

#### *Responsibility for research utilisation by Directors of Nursing*

Whilst the ward nurses developed a sense of responsibility to their patients through individualised care and developing local procedures, the Director of Nursing also had to accept major responsibility for the development of research utilisation in order to be successful. In the interviews, Directors from higher scoring hospitals took responsibility for developing research utilisation. They identified nursing research and research utilisation as an issue to be addressed and described strategies, priorities and action plans to take them forward. Directors from lower scoring hospitals did not seem to take any responsibility for research utilisation, failed to define research as an issue and spoke more generally about strategies, if they had them, and did not describe plans to action them.

Two of the Directors from lower scoring hospitals felt that there should be nothing hindering the nurses developing research utilisation and that failure was the nurse's responsibility rather than the managers.

"I can't think of any real hindrance. The systems are there and if she doesn't find out about things it's nothing short of her own fault. Putting it into practice may be difficult. It depends on who they are, the attitude of the sister and the other nurses in the ward." (Director 6)

"We would have to find some great excuse because I don't think there is any excuse for not doing it." (Director 7)

There seemed to be a distinct contrast between Directors from higher and lower scoring hospitals on whether they identified research as an issue in their hospital. Directors from higher scoring hospital commented:

“We need to look at the way we are led and also audit our current level of research-based practice.” (Director 3)

“Most of those doing courses have to do research studies and have a research component in the courses. We plan to follow up their findings and implement them in the ward.” (Director 2)

“I’ve been looking to how we take our research and development strategy forward... Whereas research, and nursing research particularly is top of my agenda between 9 and 10 today, chances are that by tomorrow, when we’ve got to talk about pain, about something else, so I have to make sure that it happens no matter what my priorities are.” (Director 1)

Not only were these Directors directly concerned with research as an issue, they also appeared quite critical and reflective on their own work in this area. A further example of the level of responsibility taken by a Director came from one of the Directors from a higher scoring hospital who had a defined strategy for the circulation of research summaries. In fact the Director took personal responsibility for part of the process. The Director and Assistant Director would review nursing journals on a weekly basis and circulate papers to relevant Directorate Nurses. It was then seen as the responsibility of the Directorate Nurse either to pass these on to relevant ward nurses or not.

“I get journals every month or week or whatever it happens to be, and I will go through it with a fine tooth comb and I will pick out particular articles. Probably copy the whole article which will give further information, and obviously references and so on and so forth, and I will send it to particular people; but at this stage I wouldn’t have been sending it very far. In other words to the directorate nurses, for example the nurse managers. There would only be six of them so that makes it fairly controllable. Then it’s up to them what they tend to do with it and I would imagine there is another filtering process.” (Director 1)

From the examples given by the Director, the articles selected were in the main focused on clinical practice. The strategy for disseminating summaries was also written in to part of a wider strategy on information dissemination. The Director from the other higher scoring hospital where summaries were circulated did not have an overt strategy. There seemed to be many sources with local knowledge being used to select relevant nurses to receive information. There was also a nurse with responsibility for research and development who had this remit as part of the post.

Interestingly, one of the Staff Nurses from this hospital reported that the librarians were often the source of summaries.

The one Director from one of the lower scoring hospitals who had reported that summaries were circulated was unclear about how this was achieved. It seemed that everything received from outside sources was circulated to the Charge Nurses.

"It's not done in any order. We get it from the classroom or the Health Board or the NBS. It's all circulated. It goes to all the wards and the sisters have their little teaching sessions in the wards." (Director 7)

The Directors were asked about their current strategies for developing nursing and in particular nursing research. Most of the Directors talked clearly about their strategies and many discussed the nature of strategies or strategies in planning. Only one Director from a lower scoring hospital could not describe any aims or strategies.

"We haven't really got anything, but we are going to have an audit on our nursing establishments and the closure of the nursing home." (Director 7)

In contrast, the Directors from the higher scoring hospitals talked not only about the preparation or existence of a strategy, but also how it would be taken forward in practice.

"Education is quite clearly identified with, for example, the education requirements for all nurses within the trust to see they are fully met....Clinical practice is about the expansion of the scope of professional practice and will continue to be identified and patient needs met. Every patient and client will have a named nurse, and the concept of clinical supervision will be introduced. For research and development, a nursing research care group will be set up with a representative from each of the directorates. The actual top line objective is that nurses are encouraged to relate current research to their clinical practice in order to improve patient care." (Director 1)

"We are about to do a strategy to include research, audit and quality....Seminars in clinical supervision will be organised and that will be important in disseminating research. We will be putting someone into post specifically for this and promoting research-based practice will be a part of their remit." (Director 3)



Plans to translate a strategy into actions were not apparent in comments made by the Directors from the lower scoring hospitals. One had developed a nursing strategy from the National Strategy and then grouped responsibilities for it into two areas. Two senior nurses in the Trust were then given responsibility for each strand. As far as nurses at ward level were concerned, their involvement was receipt of a booklet containing the objectives of the strategy. The Director commented:

"The R & D strategy is for all professional groups and that will support nurses. There's an issue about getting them to use research findings but I think we're a step away from that at the moment." (Director 5)

It was disappointing that the use of research and the development of nursing was thought to be out of reach at that time. Another Director was quite vague about how their strategy might be taken forward.

"It's about making people aware of research. How they can participate, how it can improve practice and sustain improvement. To look at the scope of practice and professional accountability." (Director 6)

What was not clear was how these aims were to be achieved.

Directors from higher scoring hospitals not only accepted more responsibility but also were more pro-active in dealing with the barriers to research utilisation. When asked what hindered nurses finding out about or using research, several Directors mentioned 'time' in terms of resources being scarce and demands on the service high. Directors from higher scoring hospitals were able to offer suggestions about how to deal with their problems:

"I think people used to say there's no money, although there was money and I indeed, I think there is still money....I do think it's made quite difficult for people sometimes....but nevertheless, there is money and if you've got the enthusiasm and if you want to do this piece of research you can do it." (Director 1)

When the Directors were asked about their current priorities for nursing in the hospital, a similar picture appeared. Directors from higher scoring hospitals had

priorities in distinct areas and talked about how they were dealing with them. One talked about education as a priority which also enabled nurses to be introduced to research and conducting project work.

"I am having a meeting with the managers and the education staff to follow through the personal development of staff and work out a programme for nursing so we have something on every month. I am also meeting with the college and telling them what we want to develop." (Director 2)

In contrast, one of the Directors from a lower scoring hospital said:

"We have to let all this settle down (staff reviews and nursing home closure). We hope to have a new hospital. I've got nothing really unless there's anything the girls want." (Director 7)

The Directors from lower scoring hospitals therefore tended to see research utilisation as the responsibility of the ward nurses and perceived no real barriers. Directors from higher scoring hospitals tended to see responsibility for research utilisation more as their responsibility, to provide practical support and encouragement in limiting the barriers and facilitating the ward nurses.

### **Autonomy for Research Utilisation**

Autonomy results when nurses have the requisite authority to be self-determining. Authority may come in part from knowledge or charisma but the nurses in this study reported that authority was very much related to position in the hierarchy. In order for nurses to be self-determining then, authority had to be invested in them by the Charge Nurse who in turn required the investment of authority from Senior Nurse managers and ultimately the Director of Nursing.

Whilst one of the Directors from a lower scoring hospital spoke of 'giving encouragement' as helpful, the Directors from higher scoring hospitals spoke about setting the right climate in which autonomous practice was promoted and gave examples of how they achieved that.

"In the surgical directorate we have a very open management style. We have spent a lot of money on the nurses, developing their management skills, on assertiveness so that they can put forward their case. They have to prove their worth and have to have sound evidence to back it up." (Director 4)

"The staff for instance will not put in a request for equipment unless they have researched it as the best possible for the patient's needs. You have to develop that culture with them. Sometimes they will ask for things on a trial basis, they know they have to justify what they want and not just go on what the rep. tells them." (Director 2)

The higher scoring Charge Nurses spoke of how they then invested the authority for patient care in the ward nurses.

"Authority is important. You have to trust staff to go off and make decisions, with support if they need it. I try to get them to use their own initiative." (Surgical Charge Nurse 5)

"If we treated them as professionals, like they have something to offer....If there isn't someone to help and push them to develop, then it will all be forgotten. We need to empower the registered nurses with more knowledge and input to use the knowledge." (Medical Charge Nurse 3)

Along with this was a sense of nurses sharing their authority for care decisions with the patients, rather than using their invested authority to impose what they thought was 'best to do for them.'

"The patients should be asked about their care, they have to do what they want to!" (Surgical Staff Nurse 13)

"It's important to try and promote patient autonomy through the nurses. If you have a good relationship with a patient, you can make sure the patient gets what they want rather than what the system wants." (Surgical Charge Nurse 2)

Lower scoring interviewees only mentioned issues of accountability and authority briefly. Often, this was not in as much depth or at the same level of analysis as the higher scoring nurses or suggested a lack of authority to make practice changes.

"You make decisions all the time about your patient's care. You can put changes into practice if you have the authority to make decisions." (Medical Staff Nurse 21)

"You can read the journals but it's trying to bring back what you've found. It tends just to go the same old way, it's really difficult." (Medical Staff Nurse 23)

### *Control over resources*

If a nurse is to be held accountable for practice, not only must knowledge for practice be required but also that responsibility for practice is accepted and authority to carry out the practice invested in the nurse. Part of that authority may include the control of resources for patient care. Several comments were made in relation to the financial pressures and lack of control over resources when attempting to change practice.

"We can be blocked by costs such as pharmacy. For example, we wanted electronic thermometers but they costed out too much so we were stuck." (Surgical Charge Nurse 9)

"Management decisions are usually financial and they're trying to cut corners quite often." (Medical Staff Nurse 16)

Containing costs was perceived to be the *raison d'être* of managers, with ward nurses seeing themselves as having to fight to preserve a quality service and develop nursing practice.

Nurses seem to be made responsible for patient care and nursing developments but in some cases were not given the authority to either make the decisions or command the resources required.

### *Autonomy and relationships with medical staff*

Some of the nurses thought medical staff limited their autonomy. In particular, the higher scoring nurses talked about working closely with medical colleagues and the need to overcome any medical dominance of nursing practice. They perceived difficulties, either in the past or more generally, with medical staff blocking changes in nursing practice. When asked if there was anything at ward level that hindered moves toward research utilisation, one nurse replied:

"Medical staff! They can't stop you totally though. We needed to change them over time. You've got to work together and that needs careful management." (Surgical Charge Nurse 5)

"To use research in practice you need to be assertive. Our surgeons still want to do pre-operative shaving." (Surgical Charge Nurse 2)

It seems that the higher scoring nurses were challenging and proposing changes in practice with medical staff and had on many occasions met with some lack of cooperation. Arguably medical staff should perhaps question the rationale for practice changes, but it seemed that some of the conflicts arose over boundaries of responsibility for a practice.

"Consultants can cause a problem sometimes although they're not too bad here. The problem is it's their treatment but it's our nursing practice, for example caring for a chest drain. Trying to get them to look at research is often difficult. In many other wards they try and dictate the nursing care." (Medical Charge Nurse 3)

Many of the lower scoring nurses saw the medical staff in a quite different light. They felt medical colleagues were supportive and came up with good ideas.

"If you are encouraged to ask questions, you look things up for yourself and even ask the surgeons. They are very good that way." (Surgical Staff Nurse 18)

"I have newer members of staff doing degrees and diplomas coming back with new ideas as do the surgeons here." (Surgical Charge Nurse 20)

The lower scoring nurses appeared not to be challenging medical dominance and were happy for medical staff to take the lead in dictating practice. Perhaps for this reason they seemed to enjoy good relationships and there was no mention of debates over practice boundaries. It seems that higher scoring nurses were more assertive, had greater sense of autonomy over nursing practice and were prepared to take the lead in developing practice. Challenging traditional medical dominance led to friction and lack of support at times.

### *Autonomy in medical and surgical nursing*

Several nurses suggested that nurses in surgical wards were more involved with decision making so had more autonomy and were more assertive:

"Maybe medical wards are more traditional. In surgery things happen much quicker. Nurses will make decisions. We don't wait for the medical staff to tell us what to do." (Surgical Charge Nurse 2)

### *Assertiveness and higher education*

As has already been highlighted in the discussion of education in the provision of knowledge for research utilisation, nurses who had completed higher education had a more questioning approach to practice. Along with the knowledge gained through studying, these nurses also became more self-confident and assertive in making practice changes.

"Having done a Diploma and a Degree, you become more aware of the importance of research and it becomes second nature when you see something in the journals that seems like a well-founded study and it's quite different from what's being used in the hospital, then you act on it. Before doing higher education I tended to go with the flow of the hospital. Higher education makes you more searching and try and improve the quality of the service. It makes you more questioning." (Surgical Staff Nurse 10)

### **The Influence of The Charge Nurse on Research Utilisation**

The influence of the Charge Nurse appeared to be key to promoting or hindering research utilisation by ward nurses. The Charge Nurse seemed to exert a powerful affect as a role model and be the clinical expert in the ward. The Charge Nurse with a democratic, participative management style also created a climate of teamwork, peer accountability and facilitated reflective practice. The structure of care delivery in the ward was also seen as the responsibility of the Charge Nurse.



### *The Charge Nurse as a role model*

The 'setting of example' was mentioned by many nurses, the power of the Charge Nurse as the professional role model in the ward was clear.

"You have to use power in the right way and not in an authoritarian way. It percolates right down the whole staff so if the Charge Nurse acts in that way, then the rest of the staff will make decisions and feel valued and it's not just a task oriented job for them." (Surgical Staff Nurse 7)

"If those in charge show leadership and encourage people to read and make use of research, because they are held in high esteem and respected in their position, the nurses will have mutual respect." (Surgical Staff Nurse 10)

The Charge Nurses also thought that they should be clinical experts in order to set an example and earn the respect of their colleagues. The expertise was, however, to be shared with nurses rather than seen as a source of power.

"It is very important to pass it (knowledge) on. Anything that I [Charge Nurse] read and find out about I pass down to the staff and let them know. They need to think about things too, even if there's no research in the area." (Surgical Charge Nurse 9)

In this way, knowledge for practice could be gained and autonomy increased.

"We should be thinking more for ourselves because things change so quickly. We have to move forward. If they (Staff Nurses) learn to make decisions for themselves then they will learn to change and try different things." (Surgical Charge Nurse 8)

The powerful role model of the Charge Nurse was evident in demonstrating accountable practice through seeking justification for nursing practices.

"Practice changes may be imposed but I would fight it and so would most of our team. In the clinical area, we have to make the decisions. I wouldn't want a Manager to tell me what to do even if they quoted research. I would want to know more than that." (Surgical Charge Nurse 11)

However, several nurses felt that the power of a Charge Nurse could also be used to set an 'unwritten standard' through an authoritarian approach to a detrimental effect.

This was used to in part explain the lack of impact of hospital-wide policies and procedures.

"If you've got a Charge Nurse whose 15–20 years out of date and wants it done that way because that's the way it's always been done, then policy won't make much difference." (Surgical Staff Nurse 7)

"It tends to be the person in charge of the ward who tells you the way things should be done – the handbook doesn't make much difference." (Surgical Staff Nurse 10)

One Director of Nursing also felt the Charge Nurses may be important in inhibiting nurses moving to research utilisation but did not cite them as more important than other nurses in the ward.

"Putting it into practice may be difficult, it depends on who they are, the attitude of the sister and the other nurses in the ward." (Director 6)

If the Charge Nurse is seen to be questioning and knowledgeable and promote participation in decision making, then this sets a powerful role model for other ward nurses to follow. The higher scoring nurses spoke extensively about and gave detailed descriptions of the Charge Nurse as a democratic leader who encouraged nurses to participate and take responsibility for nursing practice. They also gave examples of how this worked for them in their own wards.

"We are so lucky here, our ward sister is brilliant. She has a degree and is very much into research... She is open-minded and encourages you to act as individuals and put forward your own thoughts. Others I've worked for tend to tell you how they want it done and it doesn't encourage you. It's very difficult to change things in that sort of ward and can be really frustrating." (Medical Staff Nurse 1)

"You need an openness. The sister here will be really open about things and that it's important to be aware of what you don't know." (Surgical Staff Nurse 4)

The Charge Nurses were very conscious of their effect on nurses and reiterated the importance of participative democratic values whilst promoting autonomy in the ward nurses.

"Their (Ward Nurses) opinion is of equal value to mine. They have as much right to question my practice as I have to question theirs. If they're not questioning each other's practice they're not learning. It also makes them more self-confident. Then they will want to develop and do things."  
(Medical Charge Nurse 3)

Lower scoring nurses talked about needing support from the Charge Nurse in general, but gave less detail and tended not to relate this to their own current ward. Many of these comments contained references to the potential negative effects of the Charge Nurse not being a participative democratic leader.

"You can't introduce anything new without the backing of the sister."  
(Surgical Staff Nurse 22)

A few were suggestive of more authoritarian management styles in existence:

"The ward manager runs the ward here." (Medical Staff Nurse 21)

"There are some wards where it's still very traditional and the sister doesn't come out of the office." (Medical Charge Nurse 23)

### *Teamwork*

The higher scoring nurses spoke at length of the importance of teamwork, with their peers (nursing colleagues) and other staff in the ward. The open questioning environment, which seemed to depend on the Charge Nurse's management style, permeated most comments. The culture or environment was one of mutual respect and support, the ability to question practice with confidence and for involvement of all nurses. The nurses valued research and reading as part of practice development. The ward sister was discussed as the key to the development of good teamwork in the ward.

"This comes from the ward sister, by discussion with staff and admitting that none of us have all the answers. You've got to ask for views rather than just saying what you want done." (Surgical Charge Nurse 2)

"It helps if people are encouraging you and if you can work as part of a team. You can ask questions and bounce ideas off each other." (Surgical Charge Nurse 5)

"In our ward every grade of nurse is involved in a small group looking at different things so we all guide each other. Some of the lower grades will have studied recently, but the higher grades have more experience, so putting them together is good all round." (Surgical Staff Nurse 4)

Hence, knowledge for practice and the ability to justify practice were developed.

The ward nurses also felt that responsibility for standards of practice had to be shared amongst practitioners in the ward. They were careful to point out that authority should not be abused by individuals and that decisions about practice should be shared and should reflect good teamworking.

"It should be a team approach because you need co-operation to do things in a ward. You have to involve your colleagues and get support." (Medical Staff Nurse 6)

This perhaps highlights the contradiction between the nurses sense of personal responsibility for patient care and the need for the co-operation of others in order to be able to give the care they prescribe/desire. The open supportive questioning ward culture created by the Charge Nurse would lead to this type of team working and thus the ability of individual nurses to gain co-operation for implementing individualised research-based care. Peer pressure appeared to be a powerful force when such close teamwork was created.

"Peer pressure is important as you could feel left behind if everyone else is getting involved in research and study." (Surgical Staff Nurse 10)

"If you have peer pressure that's very powerful....We are highly motivated and we pride ourselves on being go ahead and research-based." (Surgical Staff Nurse 4)

This might suggest that nurses coming in to work in such an environment would succumb to such pressure and perpetuate the culture. However, a measure of self-selection may exist, in that nurses who are uncomfortable in this type of questioning

environment may dislike the peer pressure and leave the ward. Peer pressure could also be applied negatively. One of the lower scoring nurses said:

"One of the major things is getting the support of your colleagues, knowing they are going to listen, and you're not just going to get trodden on."  
(Medical Staff Nurse 15)

#### *Creating a supportive environment*

Other lower scoring nurses spoke of the need for a supportive open environment but often from a more negative perspective. A lack of authority seemed to be perceived by these nurses.

"If they (nurses) are not encouraged then they won't want to bother as they will think they can't change things....Knowing what level you are in the off duty shouldn't make a difference. If you can come up with something useful it shouldn't make any difference." (Surgical Staff Nurse 22)

For these nurses, taking the responsibility for one's own actions was not always viewed in such a positive manner. More often, the lower scoring nurses talked about issues of accountability in terms of things going wrong.

"If something goes wrong, if the patients are not satisfied then it encourages you to try another way." (Medical Charge Nurse 23)

"There's so many legalities and people complain a lot more now so you try to do it the way you're supposed to." (Medical Staff Nurse 21)

It may be that these nurses worked in environments where there was a negative attitude to changing and developing practice and/or human fallibility was not tolerated. Criticism and unexpected outcomes were viewed negatively whereas this was not apparent with any of the higher scoring nurses. It would seem unlikely that nurses working in such an environment would be willing to take risks associated with trying out changes in practice and might shy away from personal responsibility in order to avoid punitive actions. It was not clear where the Charge Nurse gained support and encouragement from to develop the open questioning ward environment. One lower scoring Charge Nurse certainly felt a lack of support and motivation.

"You have to have the support otherwise there can be a barrier and people won't listen....What's most important to me is if the other nurses are interested... I don't even know where the library is here. I just don't feel any encouragement to look for it. There's no point." (Medical Charge Nurse 23)

One might expect that the senior nurse managers would be more important to the Charge Nurses in provision of support. Several Charge Nurses did say this was important to them but did not elaborate to any great extent on what constituted support for them. For example, one Charge Nurse said:

"You have to have support from senior managers too especially as they have the resources." (Surgical Charge Nurse 9)

Managers seem to be important in providing 'support' although the constituents of this are unclear. They were also important in their provision and control of resources. The Directors of Nursing were not specifically mentioned at any point by the Charge Nurses, which is perhaps not surprising due to a lack of day-to-day contact. As to the type of resources that impinged upon the Charge Nurse's ability to promote research utilisation, the main issue appeared to be the workload experienced by the nurses. Many comments related to the lack of time to study or read.

"The time factor is the most important. It's unfortunate; time for personal study in working hours is non-existent. Some people take the view that if they can't do the reading in work time then they won't bother." (Surgical Staff Nurse 10)

In general, the highest scoring nurses made fewer of these sorts of criticisms about time for study. It seemed that time could be made for reading if it was sufficiently valued within the ward.

"Although we are no better staffed than anyone else it is not frowned upon to take time to get to the library if we are quiet." (Surgical Staff Nurse 4)

Many nurses mentioned high workload and low staffing as reasons for not being able to go on courses and more generally, in terms of finding the time and energy to put



research findings into practice, for example, talking with each other or medical colleagues.

"We don't have a lot of time to talk with patients or each other and the medical staff or even teach the students." (Medical Staff Nurse 19)

"You come back to the ward (after studying) full of ideas but within weeks these ideas, if not picked up, they get shelved as we are so busy in the clinical field." (Surgical Charge Nurse 11)

"It gets very busy and we do get tired. You need to make an extra effort to do things better. The morale has to be good too for everyone to encourage each other." (Surgical Staff Nurse 17)

Perhaps a democratic, open, supportive ward environment went some way to helping nurses deal with pressures of workload.

Responsibility and seeking knowledge for accountable, research-based practice seemed to be promoted when a system of organising nursing care existed so as to provide individualised care for patients with individual responsibility for care by nurses (see earlier discussion, page 193-194). Primary Nursing was mentioned as one method of achieving this type of care. The responsibility for the organisation of care in a ward was commonly held to be that of the Charge Nurse.

"We do Primary Nursing and that encourages you a lot (to ask questions). You have to look after all of your patients' needs and see that they are having the best care. If you were doing just one job, you just do the task." (Surgical Staff Nurse 17)

Where such a system did not exist, ritualistic, unthinking, task-orientated approaches seemed to follow with a sense of decreased professional responsibility for patient care. One of the Directors suggested that a lower proportion of trained nurses might lead to task orientation.

"When skill mixes are depleted it becomes very task-orientated and there's then no slack in the system to do anything." (Director 4)

The lack of trained nurses was often mentioned as the hospital or ward level factor that most inhibited ward nurses in developing research utilisation. In particular, the lower scoring nurses complained about low levels of trained nursing staff. It would seem probable that patient allocation and individualised care may be less likely when there were fewer trained nurses who can only delegate tasks to untrained assistants rather than total responsibility for patient care.

When asked about the association between the proportion of 1st level nurses employed in a hospital and research utilisation practice, a Director from a lower scoring hospital did not discuss the value of 1st level nurses but referred to the value of auxiliaries, their development and taking of courses.

"I don't have many auxiliaries but we still have the enrolled nurses. The auxiliaries do take a lot of interest in their wards and a lot are doing ScotVec courses." (Director 7)

Perhaps this illustrates the lack of value placed upon 1st level registered nurses by Directors from lower scoring hospitals.

### **The Influence of the Director of Nursing on Research Utilisation**

The Director of Nursing could influence research utilisation in several ways. Firstly the level of support provided for education of ward nurses seemed to be important, whilst the style of management of the Director could also help to overcome some of the difficulties often associated with developing research utilisation in large hospitals. The management style that facilitated ward nurses to develop, and included the use of strategic planning with associated action plans, appeared to enable research utilisation.

All the Directors spoke of their commitment to supporting educational development by nurses in their hospitals. However, there appeared to be some striking differences between Directors in terms of the resources available and the ambition and strategies to achieve resources to support such developments.

One Director from a higher scoring hospital reported providing lots of support for studying:

"For example we are funding 12 ENs to undertake the conversion course. We are paying for everything for them.... One of the midwives is doing an advanced diploma and five nurses are doing a diploma. There are 13 places for the Professional Studies courses. (One of the staff)\* has just finished a degree and was funded by the Trust. There's lots of study leave given." (Director 2) (\*title changed to staff to protect anonymity).

Whilst this is impressive enough on its own, the comparison with resources available in a larger lower scoring hospital is striking when taking into account the preceding quote is from one of the small hospitals.

"I find it very difficult to give the study leave I think is needed. We do have a professional development budget but there are lots of people doing degrees and diplomas so I can't give them all study leave. I also have continuing education and the equivalent of one EN to do a stand alone course." (Director 6)

Such a large budget for education in the smaller hospital would seem to support assertions that smaller hospitals tended to be more isolated and had to strive harder to recruit, retain and develop nurses. Two of the Directors from higher scoring hospitals suggested that, as most of the smaller hospitals were in isolated areas, they were under greater pressure to 'keep up to date' and to develop and retain nurses.

"We are very committed to education here and have just completed a training needs analysis ....up here your staff is your greatest asset. If we want to recruit we have to say you have the same opportunities if not greater than in Edinburgh." (Director 2)

However, the high commitment and strength of ambition in providing resources for study was apparent in all the Directors from higher scoring hospitals regardless of size.

"If we identify a need for service development, I am strongly forceful to meet that need. Where there's a need there's always a way to find money be it from the Trust, from Macmillan, from even our own income generation from National Study days." (Director 4)

Another Director from a higher scoring hospital was quite passionate about ensuring the education budget for nurses was ring-fenced and at least maintained at current levels.

"I have to keep funding very much in my budget otherwise it disappears. The £xxx is my budget [Referring to funds for courses out with the hospital] and will remain my budget and just gets fed in from time to time. The in-house stuff would be at Directorate level and I have great worries about that because if it's at Directorate it's on a training and education line. There's only one line and anybody can access it. Well that's not acceptable so I've made provision this year for that to be reversed. I'm going to take that money back out again. I've got to protect it. I really don't care, they can do what they like with it, but it's just got to be under nursing control otherwise it'll be lost. You wouldn't see medical staff making that mistake." (Director 1)

Yet one of the Directors from a lower scoring hospital seemed to hold the value of study days in fairly low regard suggesting that being sent away for a study day was as much about the opportunity to go shopping as to attend the study day.

"It's expensive travelling from here. I divide it equally between the wards [funds for studying] and it's not the same person the whole time. It's not just a shopping trip." (Director 7)

Ward nurses commented on the influence of 'senior nurse managers' but again did not specify the Director of Nursing or Directorate Nurse. Most comments were made by the higher scoring nurses in relation to the senior nurse's role in providing education opportunities.

"Our nurse manager is very into education which is very encouraging. When you're trying, it's good to know you can get support from your managers." (Surgical Staff Nurse 7)

However, another staff nurse from the same hospital but a different Directorate, had quite different views.

"Getting study days is almost impossible. Managers don't seem to give any priority to research." (Medical Staff Nurse 16)

It may be that the effect of the Directorate Senior Nurse was perceived more by the Staff Nurses rather than any influence exerted by the Director of Nursing.

Being given time and support to study seemed to have a broader meaning for the nurses rather than the pure educational value of studying. Being sent on a study day or being supported to do a course was perceived as a type of reward, or a demonstration of support, which in turn could affect motivation.

"You should be given proper support to do a course or a project otherwise it's going to knock your morale." (Surgical Staff Nurse 18)

There were also other means by which senior management support, or lack of it, was perceived. These comments were in the main quite negative.

"Managers telling you about pay scales makes us angry. There's no flexibility, we stay an extra hour a lot and then can't get time to get to the library." (Surgical Staff Nurse 17)

"Management thinking that there's time wasted by nurses is completely wrong. If Nurses are discussing patient care, they are discussing ways of improving it." (Surgical Charge Nurse 2)

Perhaps one of the reasons that support for education was so highly valued was that gaining higher qualifications was thought to facilitate promotion and career prospects.

"Ones who've gone on to further education have had to rely on themselves, they know if they don't do, they won't get on in their career." (Surgical Staff Nurse 13)

"Those that generally go for promotion – it depends on their qualification." (Surgical Staff Nurse 10)

"You get highly motivated people who learn about research to get on, and clinically you really need to then." (Surgical Staff Nurse 4)

This perhaps clarifies why being funded or given time to attend a course was so highly valued and was perceived as a strong motivator. Many ward nurses saw higher

qualifications as necessary for higher grade posts although this was not mentioned by any of the Directors.

The size of a hospital seemed to influence the level of research utilisation in several ways. Three of the Directors felt that smaller hospitals might tend to have a higher level of research utilisation as communication would be easier and managers would be more likely to have contact with ward nurses.

"The smaller the unit the more ease of communication. Management are more likely to talk with the clinical staff. We can discuss any developments of policies." (Director 4)

One of the Directors from the lower scoring hospitals felt that research utilisation was more likely in a large city teaching hospital, and another felt smaller hospitals may be advantaged, as they were less acute and did not suffer from the same pressure of work as the bigger acute hospitals.

"They don't have the pressure that a big 500 bed multispeciality hospital does. There is probably more time for nurses to think about what they are doing. The sheer volume of work in an acute hospital means they don't have much time." (Director 6)

These findings were not supported in the survey data and the same Director mentioned the high acuity and workload as a problem in response to several questions. High acuity and workload may have been an over-riding issue within the hospital at that time.

Ward nurses agreed that lines of communication within a hospital were important with nurses from smaller hospitals suggesting that their size facilitated communication.

"This hospital – it's quite small so we can be a bit more friendly and it's easier for teaching and communication." (Medical Staff Nurse 24)

Nurses in medium and larger sized hospitals commented on the levels of bureaucracy that impeded change.



"If you want to change some things on the ward it's got to go through so many channels." (Surgical Charge Nurse 2)

Some of the Staff/Charge Nurses felt that bureaucracy and many levels of hierarchy made communication and agreements on practice changes difficult. Also support and encouragement from Senior Nurses was seen as helpful and might be easier when day-to-day contact was more likely.

Whilst a small hospital size might facilitate contact, large hospital size may not necessarily preclude it, as several large hospitals managed quite a high level of research utilisation. The willingness to take responsibility for developing research utilisation by the Director has already been mentioned (see pages 200-201). It seemed that Directors from higher scoring hospitals were not only highly motivated and action oriented, but they could talk in detail about how they gave support to ward nurses. Whilst they retained responsibility for developing and implementing strategies for research utilisation, they also promoted bottom up change and facilitated ward nurses to have ownership of the changes.

Providing encouragement and support was a recurring theme when Directors were asked what they felt was most important in helping nurses find out about and use research in practice. One director from a higher scoring hospital summarised it as:

"Maybe role model is the wrong word but if anyone comes with a proposal or suggestion and if it's a good idea, then to have the encouragement and support to take it forward. It's important to me that they know that's the sort of culture they are working in, that they would be enabled to do things." (Director 2)

Another Director from a high scoring hospital talked extensively about how ward nurses were facilitated to develop research utilisation. Having a strategy to take forward, creating a support post but keeping the management structure at a minimum and creating opportunities for time out were all discussed.

"I think facilitating. Working out some sort of strategy that is to be accepted by the Trust that facilitates and actually helps people. We can't do it....There's

no point in having Directors around the place doing things or big departments....we have a very small department quite deliberately. I can't do quality, risk assessment and implementation. I can't do that but I can enable other people to do it and they are the people who need to do it. They are on the wards. They are the people who will understand what needs to be addressed. In order to be able to facilitate....I would like to see an education and research facilitator. Not somebody to do it. Somebody to facilitate it and to allow and enable other people to do it." (Director 1)

This Director was typical of those from higher scoring hospitals in demonstrating the enthusiasm to take forward practice changes. In response to the question about the lower level of research utilisation in medical rather than surgical nursing, the Director began to think about how the situation might be addressed.

"I think perhaps it's just a matter of they recognise that things move on perhaps a little bit quicker. In medical care....there is this tendency to think of it as being less developing areas of practice and I don't know that that's true, and indeed what's more, I think nurses can effect it much more than perhaps they can in surgical....that is a really important message to get across, because as I said it would allow me the opportunity certainly to go back to medical and say 'Well is there something we can be doing a bit more pro-actively in relation to changing practice?' (Director 1)

It was also interesting to note that two of the four Directors from higher scoring hospitals were quite focused on the development of clinical issues. They reported that this would primarily involve the ward nurses themselves in taking forward the issues. When asked about what current priorities for nursing, a Director responded:

"Clinical development at ward level, with a bottom up process. We want to put in clinically expert people to influence at ward level." (Director 3)

Such a commitment to developing practitioners and supporting them to take charge of practice development was not so apparent from the Directors of the lower scoring hospitals. One agreed with the other Directors that staff empowerment and creating 'the right sort' of climate was key but also that it was difficult to achieve.

"The professional development, them going on and expanding their role, just showing that no-one can do without them, not under-valuing them – showing them it's OK to try things out and if they are wrong they can go back and try again. But that's quite a difficult climate to create." (Director 6)

Another Director spoke of overcoming difficulties and barriers as the most important issues. It seemed that the Directors from the lower scoring hospitals tended to have more negative views, and not to be able to talk from the same constructive points of view as Directors in higher scoring hospitals.

## **SUMMARY OF THE FINDINGS**

Nurses in general medical and surgical wards are on average moving into the stage of using research in their practice at least some of the time. The total mean RUS for all nurses was 2.65 (SD=0.57 n=680). The weighted total mean RUS (calculated to take account of cluster and disproportionate sampling) was no different to the unweighted score suggesting that the effect of cluster sampling had been balanced by adequate stratification.

There are however variations in the level of utilisation of individual practices. Scores on individual practices ranged from 61% (405/664) of nurses never having heard of a practice to 85% (574/674) always using a practice. Taking indirect utilisation into account acknowledges other forms of research and may have a significant impact on practice. It seems that the impact of the indirect utilisation of research may have been underestimated. The reasons why nurses are unable or unwilling to utilise research in their practice require further explanation.

There were examples in this study of practices that could be used independently, and those that could be argued to require some co-operation from colleagues, both being under-utilised. A lack of co-operation by others has been cited as one potential reason for the lack of research utilisation (Hunt 1987, Camiah 1997) but it was not significantly related to research utilisation in this study. However, nurses did discuss relationships with medical staff in the interviews. It seemed that nurses with lower research utilisation did not perceive any problems with their relationships with medical staff as they were happy not to challenge medical dominance. However, nurses with high research utilisation who were assertive and questioning of nursing

care, did report some conflicts with medical staff when attempting to utilise research especially when boundaries of care were involved.

Several variables were significantly associated with high levels of research utilisation. In order to understand the relationship of a group of variables with research utilisation, multiple regression analysis was carried out. There were two variables (proportion of 1st level nurses in the hospital and the hours spent studying each month off duty) that correlated significantly individually with research utilisation that had to be omitted from this multivariate analysis due to large amounts of missing data. In the multiple regression analysis, highest qualification, Factor 1 (autonomous professional practice), whether the nurse worked in a surgical ward or not, whether the nurse had studied nursing research, whether research summaries were circulated to the nurse's ward, and whether the nurse read Professional Nurse at least occasionally, were included in the final equation. The total amount of variance explained in the nurses' total mean RUS was 15.5% ( $R^2$  adjusted=0.155). Whilst this leaves a large amount of variance unexplained and/or due to error, it is considered a moderate relationship in such an analysis and was unlikely to have occurred by chance despite the large number of variables entered into the equation.

In the subsequent interviews, the ward nurses and the Directors of Nursing discussed the findings of the survey and offered their own interpretations. From analysis of the data, several conceptual categories or themes emerged. These themes were understood using accountable practice and its elements as a conceptual framework. Nurses felt that long-term higher education courses gave them the skills and the confidence both to question current practice and also to utilise research to address these questions. They believed clinically focused, research-based journals were most useful to them although more specialised journals were used as reference sources, particularly by nurses taking academic courses. The support of the Director of Nursing and the Charge Nurse were important if nurses were to read widely and to be supported in attending courses and study days; providing an 'information broker' was also thought to be helpful for making sense of the volume of literature in nursing. In hospitals where there were a high proportion of registered nurses, the nurses felt there were more opportunities for discussion with their peers. However,

this may also be a reflection of the commitment of the Director of Nursing not only to providing high levels of registered nurses but also to the creation of a wider culture that supported the development of professional nursing practice and research utilisation within that. Nurses found the difference in research utilisation between medical and surgical wards more difficult to explain. They argued that in surgical nursing, there were more research and technological advances, and that there were more discreet skills which were more amenable to research and that could be directly applied.

When nursing care was organised to enable individualised care, the nurses felt a strong sense of responsibility for patient outcome and were stimulated to question and justify their practice. This sense of responsibility for practice was further developed when nurses felt ownership of, and involvement in, local policies and procedures, and changes in practice. Yet the Director of Nursing from the higher scoring hospitals also took major responsibility for research utilisation and described strategies, priorities and action plans to address its development. They were also more pro-active in overcoming the barriers to research utilisation.

In the higher scoring hospitals, Directors of Nursing spoke of how they promoted autonomy in the ward nurses whilst the Charge Nurses told how they invested the authority for patient care in the ward nurses. Such empowerment enabled the ward nurses to make their own decisions and encouraged them to think critically about the care they offered and make practice changes to utilise research. This control over one's own work also extended to control over resources for patient care. Nurses spoke of how their efforts to utilise research were hampered when they could not secure sufficient or the right type of resources. The nurses thought medical staff limited their autonomy yet a lack of co-operation by medical staff in making practice changes was not significantly related to research utilisation in the survey. It seemed that autonomous knowledgeable nurses were able to confidently promote research utilisation whilst recognising that this could create conflict with medical staff over boundaries of care responsibilities. Nurses who had lower research utilisation seemed to be working in a climate more where medical dominance was accepted, where they were not challenging practice and creating potential conflict, and hence

did not perceive any problems with relationships with medical staff. Nurses in surgical wards and those who had completed higher education were also thought to be more confident and assertive in making practice changes.

The Charge Nurse was a powerful role model in the ward and appeared to be key to promoting research utilisation. Research utilisation was facilitated in a ward where there was democratic, participative management with a patient-centred form of care delivery. This in turn led to a climate of teamwork, peer accountability, open questioning and support and further encouraged reflective practice and research utilisation. The influence of the Director of Nursing on research utilisation was not perceived directly by the ward nurses yet it was clear in the higher scoring hospitals that the Directors had a participative approach to management, were supportive of staff development and education, and used strategic planning to achieve their goals. Research utilisation was thought to be less complicated in small hospitals because communication might be easier and bureaucracy less. Yet it seemed that when the Director of Nursing in a large hospital accepted responsibility and implemented strategies for research utilisation, the ward nurses were facilitated to have ownership of the changes through participative management and could achieve high research utilisation. The Director of Nursing could then overcome the complexities and issues relating to the size of the hospital.



## CHAPTER 7

### DISCUSSION

#### INTRODUCTION

The aim of this study was to determine the extent of research utilisation by nurses in general hospital wards and to identify what organisational and/or individual factors could be associated with research utilisation. The purpose of the study was to gain knowledge that could inform strategies to promote research utilisation.

Before beginning the discussion of what was found in the study, it is probably helpful to restate its terms of reference. The definition of research utilisation used in this study (see chapter 5, page 95) was: -

Research utilisation is a process directed toward the transfer of research-based knowledge into nursing practice.

Research-based knowledge results from corroborated studies and, as argued by Horsley & Crane (1983) and Tierney (1991) may be utilised in various ways:

- Direct use - explanatory and predictive findings immediately applicable to practice.
- Indirect use - enlightening, extending understanding of practice.
- Methodological use - measurement scales, outcome measures or tools that may be used in practice.

The concept of research utilisation was operationalised using Rogers (1983) theory of the adoption of innovations. This resulted in research findings being recorded as at a stage of awareness, persuasion, used sometimes or always used. The findings of this

study suggest that nurses are, on average, somewhere between the stage of 'persuasion' or 'believing in the use of findings' and the stage of 'using them sometimes'. In order to compare the findings to those of previous studies, the number of practices where 50% or more of the nurses were aware of, believed in, used sometimes or used always was calculated (table 7.1). The findings of other studies have been discussed in Chapter 4. The findings of this study compare favourably in that more practices were known about, believed in and used at least sometimes by a greater proportion of nurses. The total mean RUS is higher than in other studies but none of the other studies have been conducted in the UK or with only general medical and surgical nurses. As each study using the approach developed by Brett (1986) necessarily uses different nursing practices to suit the context, it could be argued that the results are not strictly comparable. It is possible that the nursing practices chosen for this study could be more widely reported and therefore well known than those used in other studies. Also, the inclusion of indirectly utilised research and research requiring the co-operation of others in this study may lead to rather different results to all previous studies which have excluded practices that rely on the co-operation of others and included only those that are directly utilised.

Author	Brett (1986)	Coyle & Sokop (1990)	Michel & Sneed (1995)	Varcoe & Hilton (1995)	Berggren (1996)	Rutledge et al (1996)	Rodgers (Present study)
<b>n (response rate)</b> <b>Context</b>	278 (63%) USA, med/surg & critical care	112 (56%) USA, med/surg & critical care	157 (84%) USA, Sigma Theta Tau members	183 (42%) Canada, med/surg & critical care	84 (74%) Sweden, midwifery	1100 (NA) USA, oncology	680 (73%) Scotland, UK, med/surg
No. of practices of which 50% or more of nurses were aware of.	10/14	9/14	- (total of 5 practices)	-	10/14	8/8	13/14
No. of practices of which 50% or more of nurses were persuaded of.	7/14	8/14	-	-	8/14	-	13/14
No. of practices used at least sometimes by 50% or more of nurses.	10/14	8/14	-	9/10	4/14	-	11/14
No. of practices used always by 50% or more of nurses.	2/14	0/14	-	-	3/14	-	6/14
Percentage of nurses unaware of some practices	66%	72%	-	-	83%	47%	61%
Total mean adoption/research utilisation score (max. score 4, always use)	<b>2.17</b>	<b>1.96</b>	<b>2.21</b>	<b>2.15*</b>	<b>2.06</b>	<b>3.33**</b>	<b>2.65</b>

- no data available \* max. score of 3 - always use \*\* includes only 330 nurses who responded to all 8 practices NA= Not applicable

**Table 7.1 The utilisation of specific research-based practices in comparative studies.**

Several factors were significantly associated with research utilisation in this study, these being:

- higher education and the study of research
- reading research-based journals
- surgical rather than medical nursing
- the organisational culture and management style
- the promotion of accountable practice
- a clear strategy for research at nursing management level [Director of Nursing]
- hospital size
- nursing skill mix

All of these findings could be discussed in detail one by one. However, more is to be gained from a discussion that offers an overall interpretation of the findings and their complexity, and further, to identify how this might provide direction for future development of research-based practice in nursing. The focus of the discussion therefore will centre on the findings that illuminate the influence of both the individual and the organisation and also consider the interaction between individual practitioners and the organisation. To focus only on the organisation or the individual would overlook the complexities of research utilisation (Hatcher and Tranmer 1997, Upton 1999a).

These two components and their interaction will be discussed in turn starting with issues relating to the individual practitioner, then moving on to the influence of the organisation, and finally, focusing on the interaction between the individual and the organisation. Discussion of the study must take account, of course, of its limitations. These are outlined here but have been discussed in detail elsewhere (see chapter 5 pages 127-128). The main limitations are the lack of generalisability beyond general medical and surgical nursing, the assessment of a narrow range of research-based practices, the use of a self-report of research utilisation despite attempts at validation

and the lack of consideration of patient outcomes. Despite these limitations, it will be argued that this study provides new insights into research utilisation, which contribute to the now intensified efforts to strengthen research-based practice and policy across all of the healthcare professions.

## **THE INDIVIDUAL PRACTITIONER AND RESEARCH UTILISATION**

In this study a direct association was found between a nurse's level of education and the extent of research utilisation. The higher the nurse's qualification, the more likely a nurse was to use research findings in practice. Nurses with a degree-level qualification had the highest levels of research utilisation. Practitioners explained this relationship in their interviews as the result of the development of critical thinking skills, as well as enhanced confidence and knowledge which was acquired in degree programmes. They proposed that the educational process in degree programmes has a direct impact upon research utilisation in so far that it requires the student to take an active part in learning and independent study and to produce research-based assignments. Discrete study days or short courses had less impact on research utilisation because, as nurses discussed, they could be an entirely passive affair. Nurses viewed them more as a reward or a motivator than an educational process.

This positive association between a higher level of education and research utilisation has also been found in other studies. A study of research utilisation in the USA found that nurses were increasingly involved and confident about research as their educational level increased from diploma to graduate level (Brown 1997). Kajermo et al (1998) in their study of Swedish nurses, explained their findings of increased confidence among more highly educated nurses in terms of nurses not only feeling better prepared, but also having parity of education with medical staff. Nurses with a higher education background were less likely to see lack of co-operation by physicians as a barrier to research utilisation. Parahoo (1998, 1999) reported a study of research utilisation in Northern Ireland where nurses with degree-level qualifications reported higher levels of research utilisation than diploma or pre-

'Project 2000' trained nurses. In turn, diploma students had a higher level of research utilisation than the pre-'Project 2000' nurses. Degree nurses were also less likely to perceive the work environment as too busy to use research (Parahoo 1998) and were more likely to perceive a high level of professional autonomy (Collins and Henderson 1991).

In the interviews undertaken in this study nurses talked about how they became more questioning of practice following degree level studies. Not only had they gained new knowledge with which they made comparisons to existing practice but also gained the skills to look for solutions in the research literature to problems they faced in their clinical work. These findings are supported by a study by Girot (1995) who argues that it is critical thinking that distinguishes graduate from non-graduate nurses. She compared nurses taking a 'teaching and assessing' module as part of a degree programme and those taking the module as a stand-alone course. Girot found that those in the degree programme:

"were able to think more laterally and be more receptive to the introduction of new ideas. They felt they had become more confident in expressing themselves because they felt more able to support their ideas. Their breadth and depth of thought had developed and had become more flexible and less ritualistic in practice" (Girot 1995 page 391).

This flexibility and confidence may be important for nurses if they are to be successful in research utilisation and this may be the fundamental benefit of a degree-level education in promoting research utilisation. Nurses interviewed in this study explained that short courses had limited value for research utilisation, as such courses often did not require them to think or engage with the subject matter. It seems that these short courses did not develop the type of critical thinking skills that lead a nurse to question practice and seek solutions. Girot (1995) concludes from her study that short courses cannot develop critical thinking skills because it requires long-term gradual exposure to education, and exposure to others developing similar skills. However Dyson (1997) found that nurses had more positive attitudes to research after taking a stand-alone research module but she did not evaluate the impact of this



change in attitude on practice. Camiah (1997) and Hundley et al (2000) both report studies of research utilisation that involved short courses in research as part of a raft of other measures. Nurses in Camiah's study had mixed success in utilising research findings. In the study of Hundley et al the nurses in the control group reported a knowledge gain similar to that of the intervention group as the design of the study enabled access to resources being used by the intervention group. Mosely et al (1997) found a short training programme in clinical effectiveness for nurses and other non-medical healthcare workers had little immediate impact and doubtful long-term impact. The success of short courses in leading to the development of critical thinking and research utilisation is therefore uncertain from what limited evidence is currently available.

It would appear that research utilisation is more likely when nurses have completed a degree programme. Whilst there may be some element of self-selection for such programmes, it was clear from the interviews that nurses (both graduates and non-graduates) believed that it was the programmes that led to positive attitudes and the gain in knowledge and skills for research utilisation.

Education for nurses to degree level, therefore, was associated with increased levels of research utilisation in this study and this finding is supported by evidence available from other studies. The interview data suggest that it is the programmes that develop critical thinking skills in nurses and can give them the confidence to take utilisation forward rather than nurses who already have such skills and confidence self-selecting for the programmes. However, the findings of this study suggest that research utilisation is also highly dependent on an organisational culture that not only provides opportunities for study but also is supportive of research utilisation. In order for research utilisation to occur, then other pre-requisites apart from education must be in place.

## **THE ORGANISATION AND RESEARCH UTILISATION**

It has been argued that both knowledge and critical thinking skills are pre-requisites for research utilisation but the ability to exploit these qualities also depends on a favourable organisational culture. In this study, the findings suggest that the organisation, and in particular the management style at both hospital and ward levels, has a significant impact on research utilisation, alongside hospital size and type of ward.

Many authors support the view that organisational culture is the most important factor in influencing research utilisation and evidence-based practice (Champagne et al 1997, Davies et al 1999, Haines and Jones 1994, Kitson et al 1996, Lacey 1996). In a Canadian systematic review of the literature on research utilisation, Dobbins et al (1998) found that organisational factors explained between 80 and 90% of the variance in research utilisation. Studies conducted in the UK concur with these findings, concluding that organisational and cultural barriers to research utilisation were the most significant (Buxton et al 1998, Newman et al 1998).

### **Organisational Culture**

In this study of research utilisation it was apparent that organisational structures, strategies and informal customs and practices were interdependent. Donaldson and Muir-Gray (1998) argue that 'culture', 'strategy' and 'structures' within an organisation are separate concepts. Yet Peters and Waterman (1995) use the term organisational culture to encompass the total way that an organisation functions, its goals and the strategies and structures within it. They place shared values at the centre of all aspects of an organisation. The encompassing view of organisational culture of Peters and Waterman (1995) therefore seems most appropriate for use in this study.

Culture may be described as encompassing group values, beliefs and common patterns of behaviour that are perpetuated by transferring the knowledge and values of established group members onto new members (Holland 1993, Suominen et al 1997). However, Handy (1993) argues that culture is less tangible and is difficult to define.

“A culture cannot be precisely defined, for it is something that is perceived, something felt” (Handy 1993 page 191).

Hofstede (1994) argues that culture is concerned with patterns of thinking, feeling and behaviour, and that those patterns are shared among social groups.

“Culture is always a collective phenomenon, because it is at least partly shared with people who live or lived within the same social environment, which is where it was learned. It is the collective programming of the mind which distinguishes the members of one group or category of people from another” (Hofstede 1994 page 5).

Culture can exist at many different levels in society because individuals belong to numerous groupings with shared patterns. In its widest sense, culture may be at a national or regional level where common ways of thinking feeling and acting may be manifest in simple customs such as the form of greeting that is generally used. Hofstede (1994) describes culture at an organisational level as the way in which employees have been socialised by their work organisation.

The findings of the study reported here suggest that the organisation can be seen as having two levels of influence, the ward and the hospital. Corporate or organisational culture has been distinguished in nursing from that of subunits or wards, but leadership remains key to influencing both types of culture (Coeling and Simms 1996). Whilst ward nurses in this study perceived little influence from the senior nurse managers in the hospital, it was clear from the interview data that both the hospital and the ward culture were strongly influenced by this ‘top’ level. It was the senior nurses who controlled the skill mix, access to resources (including education), the value of research, the direction of strategies for research utilisation and, most

importantly, they set the tempo for the style of management of nursing throughout the hospital. Charge nurses were responsible for leadership at ward level and this appeared to promote research utilisation when decentralised management was used. Whilst hospital (corporate) and ward cultures can be distinguished in terms of their geographical boundaries, they could not be distinguished in terms of their nature in this study. In a study of research utilisation by Canadian nurses, the views of the Head Nurses (Charge Nurses) and the Directors of Nursing were found to be in very close agreement, suggesting a shared culture or a strong influence of nurse managers (Varcoe and Hilton 1995). Hospital (corporate) and ward cultures seem to share very similar values and one might therefore conclude that it is possible to exert a strong influence over ward culture through the corporate culture.

Handy (1993) however gives a different interpretation of the perceived lack of influence of senior managers in an organisation. He argues that when changes are internalised by employees, in that they feel the idea or change is their own, then they perceive no influence from those above in directing the change. Many nurses in this study did not perceive much influence from the Director of Nursing but it seemed this was because most of the influence of Directors of Nursing was transmitted down through others in the hierarchy. At ward level this meant that decisions were seen as the responsibility of the Charge Nurse or the Senior Nurse at Unit level<sup>1</sup>. Nurses with a high level of research utilisation reported more autonomy, feeling in control of changes themselves and they did not perceive much influence from the Director of Nursing. Perhaps Handy's explanation may hold true in part for these particular nurses. But nurses who had low levels of research utilisation felt little or no control over changes in their work, so it is unlikely that they viewed any new ideas or changes as being their own.

Since hospital (corporate) and ward culture could not be distinguished in the findings of this study of research utilisation, and because such a lack of distinction is

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<sup>1</sup> Wards are generally grouped into management Units or Directorates. A Senior Nurse may work as a manager at this Unit level and can also sometimes be the line manager of Charge Nurses in the Unit.

supported by another similar study in research utilisation, the organisational culture is viewed here as a whole and is not divided into hospital and ward levels for the purposes of this discussion.

In this study, several factors that were found to be associated with research utilisation (autonomy, patient-centred care, strong leadership and decentralised management) were also found to be shared among the group members (nurses) in the organisation (hospital or ward) in terms of the way they acted, felt or thought. Interview data suggest that management style had a particular influence on the way that nurses felt and acted at work, including their research utilisation.

### **Decentralised Management**

Nurses in this study who described a strong sense of responsibility for patient care, said they had the authority for practice devolved to them by the Charge Nurse, were supported in questioning practice and making suggestions for change, and were encouraged to take part in decision making, had a higher level of research utilisation. Decentralised management both by the Director of Nursing and the Charge Nurses, led to authority and responsibility for patient care being left in the control of the ward nurses. The Charge Nurses created structures such as small working groups, and organised the working the style of the ward by primary nursing, to enable nurses to make decisions both about direct care of individual patients and about ward protocols. As a result, the ward nurses became autonomous and empowered.

Conversely, a lack of authority to change practice has been cited in studies using the Barriers scale (as described in chapter 4) as being one of the major hindering factors for research utilisation (Funk et al 1991a, 1991b). This was confirmed by subsequent studies using the scale (Carroll et al 1997, Closs et al 2000, Kajermo et al 1998, Parahoo 2000, Restas 2000, Rutledge et al 1998, Walsh 1997a, 1997b and 1997c). Other studies of research utilisation, using a variety of methodologies, have also reported a lack of authority for practice changes as a major hindrance to research utilisation (Lacey 1994, Lacey 1996, Meah et al 1996, Buxton et al 1998). A

Canadian study of nurse managers supports the effect of decentralisation in promoting high levels of autonomy, organisational commitment and job satisfaction (Acorn et al 1997). In a large study of German psychiatric hospitals, nurses in traditionally managed hierarchical hospitals reported the least autonomy and control (Bussing 1988). However, in the hospitals with less hierarchy in this German study, there were opportunities for nurses to influence and take part in decision making, increased teamworking and a co-operative structure.

Decentralised management, therefore, seems to be key to providing favourable conditions for research utilisation, including autonomy for practice by ward nurses. Decentralised management has been defined as “the delegation of authority for decision making to the operational level” (Acorn et al 1997 page 53). This is just one of many different styles of management within organisations, yet many share similar characteristics. Many characteristics can be considered as sitting at either end of a spectrum or continuum.



Whilst management theories are derived predominantly from industrial settings and caution has to be exercised in their application to public sector settings such as hospitals, the general principles are illuminating and may be reframed in the context of the health services (Spurgeon and Barwell 1991, Flanagan and Spurgeon 1996). In mechanistic styles of management, the organisation is broken down into specialist subunits each with their own goals, with an overall understanding of the organisation only occurring higher up the hierarchy where communication and authority are controlled. In such organisations, there is a traditional bureaucracy and a rational hierarchy. Reliability and predictability are key objectives and, as such, these organisations tend to work with numerous rules and policies (Cowley 1995). This style of management may be useful in stable conditions but it does, however, lead to



inflexible and rigid organisations that have difficulty responding to dynamic situations and complex problems (Burns and Stalker 1961, Hazewinkel 1988, Spurgeon and Barwell 1991). Furthermore, Beetham (1987) believes that the impersonality of bureaucracy can lead to a lack of engagement and commitment among the workers whilst the hierarchy leads to a lack of responsibility. In contrast, in more organic types of management, there is a flattened hierarchy, decentralised management, few rules, a supportive environment and autonomy over the work is mostly with those closest to it or 'on the shop floor' (Peters and Waterman 1995). In these organic types of organisations, there is flexibility and a willingness to take risks; the workers feel able to challenge values, norms and policies; and as a result, a culture of innovation develops (Kanter 1983, Cowley 1995).

Hospital managers, however, may be fearful of the uncertainty associated with organic styles of management with the potential for some wastage of resources (Burns and Stalker 1961, Beetham 1987). Furthermore, hospital managers have a duty to retain control over the actions of their employees in order to minimise risks to patients and will necessarily require some mechanistic and bureaucratic means to achieve this. Hospitals, therefore, may be resistant to these organic styles of management but the findings of this study suggest that organic decentralised management does produce higher levels of innovation such as more research utilisation by nurses. This view is supported by several authors (Kitson et al 1996, Haines and Jones 1994, Walby et al 1994) and also in Kenrick and Luker's (1996) study of research utilisation by district nurses. Kenrick and Luker found the highest levels of knowledge of research and reported research utilisation in the locality with the flattest management hierarchy where managers themselves continued to hold a small patient caseload. Whilst the management hierarchy was not directly assessed in the study reported here, the interview data suggests that in hospitals where nurses had high research utilisation there were fewer strata in the nursing management hierarchy. Many other studies of research utilisation neglect to relate their findings to the organisational culture and management styles in their analysis (Estabrooks 1999a).

This neglect has arguably downplayed the importance of the relationship between organisational culture and research utilisation.

The importance of organisational culture has been illustrated in studies of those hospitals in North America which have demonstrated superior rates of recruitment and retention of nurses; these are commonly known as 'Magnet' hospitals. Such hospitals are characterised by a flattened hierarchy; decentralised management with an emphasis on professional autonomy; and a position of authority on the governing board for the chief nurse executive (Aiken et al 1994, Buchan 1999). It has been argued that these hospitals have seven out of the eight attributes of organisational excellence proposed by Peters and Waterman (1995) as characteristic of the organic style of management (Havens and Aiken 1999). Several of the Magnet hospitals have now progressed in developing and formalising decentralised management (Havens and Aiken 1999) through a system known as Shared Governance (Geoghegan 1995). Whilst research utilisation has not been an outcome variable in the studies of Magnet hospitals, it has been shown that their nurses delivered high quality care; that there were high levels of patient and nurse satisfaction; and that there were lower mortality rates (Aiken et al 1994). Such studies do not support fears concerning the suitability of organic decentralised management for nursing in acute hospitals and would suggest it is an environment that is likely to cultivate not only innovation and research utilisation, but also quality of care and patient and staff satisfaction.

### **Autonomy**

The opportunity to exercise autonomy was closely associated with levels of research utilisation in this study. Nurses who reported more autonomy had higher levels of research utilisation. In the interviews it became clear that authority for autonomous practice was devolved to nurses by the Charge Nurse and was related not just to day-to-day patient care decisions, but also to control over resources and of the boundaries of nursing care. Nurses who were able to practise autonomously were also able to question practice and to seek solutions based on research findings. The influence of the Charge Nurse was key in creating a ward environment that supported autonomous

practice. Whilst the authority for research-based practice needs to be invested in the ward nurses by the Charge Nurses, support for the devolvement of authority must be given in turn to the Charge Nurses by the Senior Nurses. One method of demonstrating such support was that Senior Nurses, including the Director of Nursing, set an example of devolved authority in the way they themselves managed the nursing staff. Directors of Nursing who initiated a decentralised management style empowered Charge Nurses to adopt this same approach when managing ward nurses.

Kanter (1983, 1993) concurs that it is organisational structures that control workplace behaviour and that these structures can empower the workers and lead to satisfaction, innovation, commitment and feelings of autonomy. This analysis underpins her theory of the structural determinants of power. Empowerment can be seen as the sharing of power or the gain of power over one's own work (Sabiston and Laschinger 1995). As such, it is similar to definitions of autonomy and decentralisation where authority for decisions is given to those carrying out the work. Kanter (1993) proposes that empowerment results when

- jobs allow discretion, flexibility and creativity
- there is access and support in the use of resources
- alliances are formed across and outwith the organisation
- there is the opportunity for growth and development through involvement in broader organisational functions eg: hospital wide committees such as those in Shared Governance.

Support for Kanter's theory of the structural determinants of power in acute hospitals comes from several North American studies (Chandler 1991, Wilson and Laschinger 1994, Sabiston and Laschinger 1995). All of these studies originate from one University, they are small-scale and the possible limitations of their application to the UK context must be acknowledged.

The problem of a lack of time was not associated with research utilisation in the survey part of this study although nurses did talk about a lack of time for research utilisation in their interviews. Nurses who were able to utilise research made fewer of these types of comments and talked more about making time for an activity (research utilisation) that was valued. Almost all studies using the Barriers scale including a Canadian study (Fitch and Thompson 1996) and UK study (Hundley et al 2000) have found that nurses report lack of time as a significant barrier to research utilisation. Kajermo et al (1998) argue that a lack of authority to control one's own time leads to an overall perception of lack of time. It may be that nurses who practise autonomously also feel able to manage their workload and their time, and so are less likely to report lack of time as a barrier to research utilisation. Hence, a further argument for devolving authority for practice to practitioners is that they are more likely to feel in control of their work time and, as a result, are more able to find time for research utilisation activities.

This study has shown that autonomous practice appears to facilitate research utilisation by nurses and, in turn, that the ability to practice autonomously is determined largely by the organisational culture. Other effects of the organisation on research utilisation that were found in the study were that of hospital size and ward type and these will now be discussed.

### **Hospital Size and Ward Type**

Both the size of the hospital and the type of ward in which the nurse worked (medical or surgical) were found to have a significant effect on research utilisation in this study. As hospital size increased, the extent of research utilisation tended to decrease. Thus, in large hospitals, there tended to be lower levels of research utilisation. However, this association was only apparent after two hospitals had been removed from the analysis. This was done because they did not follow the overall trend in the data (Chapter 6 pages 168-169). The positive relationship between hospital size and research utilisation is in keeping with the findings of an earlier study by Brett (1986). She found that when hospitals had a good number of mechanisms to support research

and research utilisation, the nurses in the large hospitals were less likely to utilise research and the nurses in the small hospitals were more likely to utilise research.

It is perhaps not unsurprising then that research utilisation is lower in large hospitals given their ever-increasing complexity and specialisation. Handy (1993) argues that the size of an organisation is often the most important factor influencing organisational culture. He states that larger organisations are more formalised, tend to be more bureaucratic and are perceived as more authoritarian by employees than smaller organisations. Burns (1977) also argues that large complex organisations have a tendency toward a more mechanistic organisational culture and centralised management. The findings of a study by Hendel and Bar-Tel (1994) concur that larger hospitals tend to have more centralised styles of management. In a survey of medical and surgical wards, they found that decentralised management had a larger impact on the quality of nursing care in the larger hospitals than in the small and medium-sized ones (their definitions of hospital size are broadly similar to that used in this study). They argue that the greater impact of decentralised management in larger hospitals is because they have more capacity to be centralised and bureaucratic. Their study was conducted in government hospitals in Israel and supports the impact of decentralised management on the delivery of nursing care in acute hospital wards in countries outside the UK.

In the study reported here, there were two hospitals that did not conform to the overall trend of increased hospital size associated with decreased research utilisation. In particular, the hospital with the highest overall level of research utilisation in the sample was also one of the largest. Interview data suggest that in this hospital, despite its size, there was an organic culture using a system of decentralised management, which seemed to be able to promote research utilisation effectively. It appears that the tendency for centralised and bureaucratic management can be overcome in large hospitals allowing development of a more organic decentralised approach so promoting research utilisation. The other hospital that did not conform to the general trend was a small hospital that had a lower level of research utilisation

compared to the other small hospitals. The reasons for this are unclear and were not explored at interview because the nurses from this hospital were not selected for interviews.

In addition, there were differences within hospitals that emerged in this study. Nurses working in surgical wards generally reported higher levels of research utilisation than those working in medical wards. Several of the practices were concerned with aspects of peri-operative care, yet when these practices were removed from the analysis, the differences between medical and surgical nurses' extent of research utilisation remained. Surgical nurses continued to have significantly higher research utilisation (see Chapter 6 p.156). It would appear that the higher level of research utilisation by surgical nurses is not attributable to practices being more relevant to them than medical nurses. However, surgical nurses higher utilisation of research was explained, at least in part, by nurses at interview suggesting that technological change was more prevalent in surgical rather than medical wards. However, there was also a suggestion that nurses in surgical wards had a more predictable workload (i.e. more constant patient turnover and trajectory of care); felt more in control of their working environments; and so were more able to consider the introduction of research-based changes in practice. If nurses in surgical wards feel more in control of their work, they will perceive more autonomy and be able to manage their own time more. Hence, increased autonomy and control of time might enable them to engage in more research utilisation than nurses in medical wards.

Only one other UK study of research utilisation which compares medical and surgical nurses has been reported. Parahoo and McCaughan (2000) found a small but non-significant difference in the perceived levels of research utilisation between medical and surgical nurses in Northern Ireland. Medical nurses reported a slightly higher rate of research utilisation than surgical nurses. Whilst their findings apparently conflict with those of the study reported in this thesis, their findings were not statistically significant and so could be simply due to variation in a sample where there was no real difference in the population. The trend they report is also quite small in that 38%



of medical nurses report using research (either frequently or all of the time) compared to 30% of surgical nurses. However 7% of surgical nurses reported using research all the time compared to only 3% of medical nurses, and 61% of surgical nurses reported using research sometimes compared to only 55% of medical nurses.

Of course, perceptions of the frequency of use of research (the measure of research utilisation used by Parahoo and McCaughan), may not be a reflection of the actual use of research in practice. Nurses may underestimate/overestimate use depending on their attitude to research and their knowledge about the research basis of a practice (Hicks et al 1996). Parahoo and McCaughan drew the sample of medical and surgical nurses as a subsample of a larger, main study. In this main study, almost 40% of the nurses reported implementing new research findings over the previous two years, yet very few of them could give any concrete examples of the findings implemented. The responses were mostly inadequate and incomplete, often citing broad areas of practice (Parahoo 1998). In an attempt to overcome this methodological problem, the present study did not ask nurses to identify research-based practice but instead asked nurses about the utilisation of 14 specific research-based practices. The findings may be different to those of Parahoo and McCaughan (2000), therefore, simply as a result of the different methodology.

Data from this study suggest that nurses in surgical wards have higher levels of research utilisation because they have more control over their work patterns and hence perceive more autonomy. In contrast, nurses in medical wards feel they lack time and resources to engage in changes in practice. Parahoo and McCaughan (2000) found medical nurses reported a lack of authority and a lack of management support as more of a barrier to research utilisation than surgical nurses did but, as pointed out earlier, the findings were not statistically significant. As discussed earlier, a lack of authority may lead to a perception of lack of time and lack of control. Whilst the findings of study by Parahoo and McCaughan (2000) lend support to this explanation of medical nurses behaviour, their findings were not statistically significant despite a reasonable sample size ( $n=479$ ), and they found only small differences in nurses'

views of the barriers to research utilisation. Their findings must therefore be interpreted with caution.

Other researchers have also investigated research utilisation in different types of wards. Closs et al (2000) compared perceptions of barriers to research utilisation among 712 medical, surgical, trauma, and women's and children's nurses working in England. There were no significant differences between the views of nurses in the different specialities but this analysis was only conducted on newly constructed subscales of the Barriers scale. Descriptive statistics of the ratings of individual barriers to research utilisation by nurse speciality are given, so it possible to describe comparative ratings of medical and surgical nurses. Closs et al (2000) report that slightly more medical than surgical nurses said that a lack of time was an important barrier. This is consistent with the explanation of differences in medical and surgical nurses utilisation of research offered in the study reported in this thesis. Yet, they also found more surgical nurses than medical felt they lacked authority to change practice, which does not support the explanation offered here, nor the study by Parahoo and McCaughan (2000). Why this should be so is not clear but, again, the findings from Closs et al must be interpreted with caution since differences in ratings of the individual barriers were not subject to interpretive statistical analysis. Thus it is not clear whether these differences are likely to have occurred by chance or not.

Closs et al (2000) also report that more medical nurses than surgical nurses felt they were isolated from colleagues with whom to discuss research utilisation. In the study reported here, when nurses had more opportunity for discussion with colleagues (in hospitals with a high proportion of 1<sup>st</sup> level registered nurses), they also had higher levels of research utilisation. A high proportion of 1<sup>st</sup> level registered nurses was also thought to give more opportunities for autonomous practice. However, no comparative analysis of the proportion of registered nurses in medical and surgical nurses was conducted in the study reported here. Clearly this may be an area that merits further investigation.

The findings of this study do suggest that nurses in medical wards may perceive less autonomy in their practice and so perceive a lack of time for research utilisation and, further, they perceive a lack of control over their work patterns. Conversely, nurses in surgical wards appear more autonomous and so feel they have more time for research utilisation and, further, feel that they receive more management support. Earlier in the discussion it has been suggested that an organic organisational culture with a decentralised style of management is most likely to lead to autonomous practice and research utilisation. One possible explanation of the higher levels of perceived autonomy and reported research utilisation in the surgical wards may be that they have more organic cultures and decentralised management.

Bodt and Van Tuyl (1988) propose that working practices in medical wards are poor at coping with uncertainty and that more flexible organic systems are required. However, a study by Adams and Bond (1997) of organisational features of medical and surgical wards in England found a higher incidence of 'centralised' nursing in surgical wards. Yet in both medical and surgical wards in their study, the predominant system of organising nursing care was team nursing. They found that ward nurses perceived surgical wards as more hierarchical and characterised by lack of innovation and lack of staff development. Whilst the medical ward nurses felt they had more influence over ward management they perceived less of a sense of cohesion with their nursing colleagues than did surgical nurses. These findings are clearly in disagreement with those of the study reported here and those of Parahoo and McCaughan (2000) with regard to perceived autonomy but are supported by the findings of Closs et al (2000). There is clearly some disagreement amongst study findings in this area.

Another finding of the study reported here that is consistent with findings of Closs et al (2000) and Parahoo and McCaughan (2000), is that surgical nurses reported lack of co-operation by medical staff as more a barrier to research utilisation than medical nurses did. Adams and Bond (1997) also argue that surgical nurses tend to work less collaboratively with medical staff than do medical nurses. Whilst surgical nurses in

the study reported here also often reported this lack of co-operation, they were the ones who had higher levels of research utilisation. Those with higher levels of research utilisation (more often surgical nurses) found medical staff less co-operative because they asserted their authority and challenged medical staff in changing to research-based practice. Nurses with lower levels of research utilisation (more often in the medical wards) seemed to be happy to work within medical dominance and so did not perceive lack of co-operation by doctors as a problem. Perhaps some caution is needed when interpreting studies that report a lack of co-operation as a barrier to research utilisation. A perceived lack of co-operation may simply reflect the conflict as nurses begin to question practice, claim authority for nursing care and seek to develop research-based practice.

It would appear then, that surgical nurses are more assertive and report more conflict with medical staff in making changes to research-based practice than medical nurses. Surgical nurses feel more in control of their workload, more able to manage their own time and as a result perceive higher autonomy, which enables them to engage in research utilisation to a greater extent than medical nurses. Further, it may be that nurses in surgical wards have higher perceived autonomy due to a more organic culture and a decentralised form of management. However, this suggestion is not supported unanimously by existing research and was not investigated directly in this study.

There are a number of possible reasons for conflicting findings of this study and other studies, perhaps mostly due to methodological differences in the studies. However, no clear explanation for the differences in research utilisation by nurses in medical and surgical wards in this study can be given. Further study in this area may be particularly useful in terms of identifying other aspects of the organisational cultures in the different specialities that exert an influence on research utilisation.

In discussing the effect of organisational culture on research utilisation, it has been argued that decentralised management leads to the responsibility and authority for

patient care being devolved to the ward nurses delivering patient care. These nurses then become more questioning of practice, perceive higher levels of autonomy and also report higher levels of research utilisation. Setting the tone for the type of management used at ward level comes from the Senior Nurses and in particular the Director of Nursing. However the size of the hospital and the type of ward in which a nurse practices can also affect research utilisation. The study findings suggest that the tendency is for large hospitals to be more bureaucratic but that this can be overcome and research utilisation developed successfully. The effect of ward type is less clear and requires further study to establish the features of surgical ward nursing that enable research utilisation; these might then be used to promote research utilisation in other wards.

## **INTERACTION OF INDIVIDUAL AND ORGANISATION**

The effects of individual factors (predominantly educational) on research utilisation have, so far, been discussed separately from their interaction with organisational culture. Whilst it has been argued that the organisational culture is influenced to a great extent by the leadership of senior managers, data in this study also suggested that individual practitioners affect the organisational culture too.

It was argued that nurses who have studied at degree-level are likely to have higher levels of research utilisation. It may be that the nurses who have been given the opportunity or supported to study at this level by their managers have also been subject to some other kind of support or influence. There was a sense from nurses interviewed in this study that those managers who were committed to providing such educational opportunities were also highly committed to developing nursing in other ways that might also influence research utilisation. For example, in the hospital with the highest level of research utilisation the Director of Nursing took it upon herself to review and distribute research summaries to the wards on a regular basis. This could itself have an impact on nurses' knowledge of relevant research findings but must

also communicate to the nurses the value placed upon research by the Director. It seems, then, that studying to degree-level gives nurses the skills and confidence for research utilisation but that the opportunity to undertake this study may be influenced by the managers in the hospital. Those who have the opportunity to study at degree level may also be exposed to other influences that affect their research utilisation.

Considering the effects of degree programmes on nurses in this study, it may be that as nurses become more educated, and as a result gain in self-confidence and become more questioning of practice, they demand more flexibility, discretion and autonomy in their work. Kanter (1983) argues that as workers become more knowledgeable, they have to be given more freedom and autonomy to complete their work, and that they need freedom and support to identify their own learning needs. In an organic type of organisation workers are able to question current ways of working and will seek to develop solutions and innovations themselves. In this manner, workers influence and develop their own practice and the ways of working of the organisation. The more highly educated nurse can therefore be given more freedom and autonomy and can identify their own learning needs in an organic type of culture, and Kanter contends that they will demand and create this type of culture themselves.

This type of environment where the workers develop their own ways of working and that of the organisation has been described as 'double loop learning' by Argyris and Schon (1978). This can be contrasted with what they describe as 'single loop learning' organisations where the need for new knowledge and skills is identified by the manager, and the workers are then trained in them. This unfortunately sounds much more familiar in the approaches often used to improve research utilisation and evidence-based practice where a management initiative aimed at introducing a new set of guidelines, for instance, is put in place. The findings of this study would suggest that such an approach might have limited success in promoting research utilisation as part of the general ways of working for nurses.



It could be the higher levels of autonomy achieved by degree nurses that affects their ability to utilise research in practice. Yet both the variables of autonomy and level of education contribute separately to the variance in multiple regression analysis. It seems that the two variables do act independently to some extent in affecting research utilisation.

It would appear, then, that where the senior nurses devolve authority and responsibility for patient care to practitioners and seek to provide them with the best available knowledge on which to base their practice and the skill of critical thinking, innovation and research utilisation may be promoted. Authority and responsibility may be devolved through a system of decentralised management within a flexible, organic organisational culture with a flattened hierarchy to create a committed, motivated, autonomous, accountable practitioner.

What is interesting is that the postulated interaction between the individual practitioner and a dynamic organisation now lies at the heart of contemporary strategies to promote research utilisation. This is in response to government policy for modernisation of the health services which, in turn, now depends upon evidence-based practice and shared governance.

## **INTEGRATING RESEARCH UTILISATION INTO PRACTICE AND MANAGEMENT**

The study reported in this thesis was based on an exploratory study, which was conducted in the early 1990s (Rodgers 1994 Appendix 1). At this time, the NHS Research and Development Strategy (Department of Health 1991) had recently been published and hospitals and Trusts were only just beginning to recognise the commitments expected of them in the strategy. Further, there were still mixed views about whether research utilisation was the responsibility of the individual or the responsibility of managers. The findings of this study suggest that research utilisation

needs to be incorporated into both the management of hospitals and the practice of individual nurses.

Since the publication of the initial strategy for R&D (Department of Health 1991) other policy initiatives have continued to support the emphasis on research utilisation. Drives for increased clinical effectiveness and efficiency (NHS Executive 1996c) were reiterated in R&D strategies (Department of Health 1997a), which called for practice policy and management decisions to be based on sound research findings. A National Institute for Clinical Excellence was established to evaluate research and produce guidelines for good practice (Department of Health 1997b). Alongside this has been the continued development of the NHS Centre for Reviews and Dissemination (CRD), the Cochrane Collaboration and the National Research Register.

A major affect of these policies is to shift the responsibility for research utilisation from the individual practitioner to the organisational level. Chief Executives, Directors of Nursing, Medical Directors and R&D managers are now accountable for ensuring that structures and climate are supportive of R&D. Moreover there are pecuniary incentives attached to ensure the progress of R&D. Yet Upton (1999b) argues that the response of Health Authorities and Trusts to this call for evidence-based practice has been weak, with a lack of strategic planning to achieve it. Where evidence-based practice has been developed, it has an almost exclusive focus on medicine and too much emphasis on economy and efficiency rather than on effectiveness (Upton 1999b). Mead (2000) agrees that, despite the numerous policy documents and publications in the area of clinical effectiveness and research utilisation, there has been limited progress in nursing within current strategies. However, the findings of the study reported here demonstrate that nurses in general medical and surgical wards are utilising research to a reasonable extent in their practice and, further, illuminates some of the conditions that may promote research utilisation. Yet these conditions, in terms of both the individual and the organisation,

appear to be complex and also interact with each other. It is perhaps not surprising then that it can be difficult to incorporate research findings into practice.

“The emphasis on using scientific evidence to inform clinical practice and purchasing has characterised the NHS of the 1990’s; however the implementation of research findings into practice remains complex ..... even when clinical effectiveness is supported by apparently rigorous evidence, this has still proved insufficient to produce corresponding changes in practice” (Mead 2000 page 114).

Nevertheless, there are a number of reports of the use of discrete strategies to promote clinical effectiveness and research utilisation such as the development of clinical guidelines, teaching in critical appraisal skills, access to literature searching and implementation of discrete areas of research (as reviewed in Chapters 3 and 4). Yet in a systematic review of clinical guidelines in nursing (Thomas et al 1999), only two studies used guidelines that were in part evidence-based, and whilst the use of multiple implementation strategies is suggested there was no conclusive evidence to support this (Thomas et al 1999, Cheater 2001). In the study reported here, the impact of procedures and policies on research utilisation was minimal. Many nurses were unaware of policies and procedures and discussed this quite openly in the interviews. They said that procedures, protocols and guidelines were only effective in directing practice when they had been closely involved with development of them. Davies et al (1999) report similar findings in their study of research utilisation by Practice Nurses but caution that protocols tended to embody current practice rather than be developed to change to research-based practice. Attempts to develop research utilisation using multiple approaches (such as the appointment of a research facilitator, information and education strategies) have been reported in nursing (Knight et al 1997, Jack and Oldham 1997, Cheater 2001). Whilst these initiatives address the research culture, they fail to address the wider organisational culture, which has been identified as key to promoting research utilisation in this study. The role of ‘unwritten policy’ which can be viewed as part of the organisational culture in that it is an accepted way of working or a common pattern of behaviour, appears to

be highly influential in research utilisation in comparison to the lack of evidence to support the influence of formal written policies and procedures.

Initiatives that take a 'single loop learning' approach to research utilisation and fail to address the wider organisational culture have had limited success. A large-scale study of clinical effectiveness (PACE) has been conducted in England with 16 local projects, some of which were nurse led (Dopson et al 1999). The projects met with mixed success but, even when successful, each project addressed only one discrete topic area. Whilst some broader organisational learning or development in clinical effectiveness was perceived by 7 of the 16 project sites, there are no objective measures as yet to support broader research utilisation. Dopson et al (1999) conclude that there needs to be strong organisational commitment and the integration of clinical effectiveness if there is to be wider organisational learning. There was no evidence to support the view that a one-off project may be sufficient stimulus to change an uncommitted organisation.

The challenge then is:

“to make research and development and clinical effectiveness an integrated component of clinical practice and of management; in fact, an integral part of everyday health care business” (Stevens 1997 page 7).

Attempts at research utilisation and clinical effectiveness appear to require:

“strong evidence, supportive opinion leaders and integration within a committed organisation appear to be the primary drives, without which projects have little chance of success” (Dopson et al 1999 page 5).

The findings of this study imply that strategies to develop research utilisation need to address the wider organisational culture, to create one that is decentralised, flexible and receptive to learning, in order to have a chance of being successful. Such a wholesale change for many hospitals may seem daunting, yet current policy on Clinical Governance seems to support a move toward decentralised management and accountability for practice and outcomes at the level of practitioners delivering care.

This may be an opportune moment to take forward plans to embed research utilisation and clinical effectiveness in the whole organisation.

Clinical Governance puts the responsibility for quality of care directly with the Trusts and has evidence-based practice as a key objective (Scottish Office 1997, Department of Health 1998). Quality initiatives are to be at the level of the practitioner who must then be involved directly in the management of care. Donaldson and Muir Gray (1998) argue that, in order for Clinical Governance to be successful, there must be a transformation in organisational culture to one of openness. Such openness allows questions to be asked and answers to be sought (the double loop learning organisation), participation in management (through decentralisation), valuing of research and education, supportive management and development of clear goals and strategies to achieve them. All these characteristics seem to be those of the organic culture with decentralised management that has been argued to be essential to the development of research utilisation. As such, shared governance may be one approach to achieving decentralised management but does require authority and accountability for decisions to rest with the management committees (Geoghegan 1995).

Donaldson and Muir Gray (1998) believe that it is the responsibility of the Chief Executive to create the type of culture for Clinical Governance to flourish. It was clear from the findings of this study that the Director of Nursing had a strong influence on the type of organisational culture that permeated through the hospital and also at ward level. It seems then Clinical Governance may offer the opportunity to move toward research utilisation and high quality care, but requires the commitment of the leaders within the organisation to create the culture in which it is likely to flourish.

## **AUTONOMOUS PRACTICE AND EVIDENCE-BASED PRACTICE**

It has been argued that decentralised management within a flexible, organic organisational culture is required to create a committed, motivated, autonomous,

accountable practitioner who is then more likely to base practice on research. This wholesale culture shift might be achieved within the Clinical Governance initiative.

Central to Clinical Governance is the use of evidence-based practice (EBP). In EBP, research is used as the primary source of evidence to practice to inform a decision on what constitutes best practice. Best practice is often communicated through protocols and guidelines. It seems that the autonomy for practice is removed from the practitioner if decisions on what is best practice are removed to committees or National bodies such as the Scottish Intercollegiate Guidelines Network (SIGN). It could be, then, that authority for decision-making is removed from the practitioner in EBP and this does not promote the conditions of autonomous practice where research utilisation is likely to develop. But EBP still requires the practitioner to use their clinical expertise and decide with the patient what is best for them in their particular circumstances (Closs and Cheater 1999). The evidence is not always clear-cut and there may be conflicting research that requires interpretation. Patients may also refuse care even in the light of good evidence and desire other forms of care that lack good evidence (Closs and Cheater 1999).

Furthermore, Donaldson and Muir-Gray (1998) argue that healthcare professionals have to decide for themselves how much they want their practice to be controlled by protocols and guidelines and in this way retain autonomy over patient care. They suggest the development of local guidelines from national ones. Nurses in this study agreed that ownership of clinical guidelines was crucial, and being involved in their development led to such feelings of ownership. Nurses who had been involved in the development of local guidelines were more likely to have high levels of research utilisation. Judicious development and use of clinical guidelines, whilst under-evaluated, may be one way of increasing autonomy within the framework of EBP and Clinical Governance thus promoting research utilisation.



## CONCLUSION

Research utilisation is an essential prerequisite of clinical effectiveness and professional accountability in healthcare today. Research has been argued to be the primary source of evidence in evidence-based practice and to provide a sound basis for accountable practice.

Knowledge and skills are required by practitioners in order to appraise research for utilisation, but the skills of critical thinking and self-confidence are also required if nurses are to question their practice in the first place and, further, to put research into practice. Critical thinking skills appear to be developed in higher education where there is sustained development and also the opportunity for interaction with other students in the programme. It is argued, then, that opportunity for study at degree level may best equip nurses with the range of skills and knowledge to develop research utilisation.

But education alone will be insufficient for a move to research-based practice (Nolan and Behi 1996, Newman et al 1998). The ability to use the critical thinking and appraisal skills developed in higher education are mitigated by the organisational culture. Indeed, it has been argued that organisational culture seems to be the most important factor in influencing research utilisation. Whilst earlier studies of the barriers to research utilisation suggest perceived barriers such as lack of authority, time and management support, they fail to relate these to levels of research utilisation or to consider the impact on research utilisation should they be addressed. This study clarifies the interpretation of these barriers, although using quite a different approach to study, and relates both positive and negative influences on research utilisation to reported levels of research utilisation. In particular, the lack of time so often reported in barriers research is interpreted here as a lack of authority to control one's own practice; this can lead to feelings of lack of control and lack of time.

An organic type of organisational culture with decentralised management, devolvement of authority to the workers and a flattened hierarchy seems most likely

to lead to a 'double loop learning organisation' (Argyris and Schon 1978) where creativity and innovation, including research utilisation, can develop. In particular, decentralised management enables autonomous practice by nurses at ward level, facilitated by the Charge Nurse as ward leader. Whilst larger hospitals have a greater tendency for a mechanistic type of organisational culture, this tendency can be overcome and an organic decentralised approach used to promote research utilisation.

Less clear conclusions can be drawn about the effect of ward type on research utilisation. It has been suggested that surgical nurses have greater control over their work and higher autonomy, which enable research utilisation. Furthermore, surgical wards may be more amenable to decentralised management than medical wards. It also seems that surgical nurses (with higher levels of research utilisation) are more likely to assert their authority in developing nursing practice despite this sometimes leading to some conflict with medical colleagues. However, these findings are only supported in part by other UK studies.

The organisational culture of hospitals and wards in this study was strongly influenced by senior managers. But in an organic type of culture, the nurses begin to question practice and take responsibility for the development of solutions themselves. Hence the nurses also shape the ways of working of the organic, 'double loop learning' organisation (Argyris and Schon 1978). When the nurses are highly educated, equipped with the knowledge, appraisal skills and critical thinking skills, they will demand a high level of discretion and autonomy in their work, and be questioning and creative in their practice and more likely to utilise research. The creation and support of an organic decentralised culture by managers with a well-educated nursing workforce are central to the promotion of research utilisation.

This study suggests that a wholesale culture shift in the organisation is needed to enable the development of research utilisation throughout the organisation. The introduction of Clinical Governance may be just the opportunity to address such a shift to an organic, decentralised, organisational culture. One guiding principle of

Clinical Governance is EBP which creates a potential conflict with the professional autonomy needed for research utilisation. Practitioners need to develop local guidelines for best practice from national ones, and take responsibility for the application of research-based guidelines or protocols to, and with, their individual patients. Ownership and involvement with guideline development were seen in this study as empowering by nurses and enabled research utilisation. In this way, professional autonomy and accountability are developed enabling research utilisation as part of EBP and Clinical Governance.

Current policy places responsibility for managing research utilisation with senior managers. They should be well placed to create a climate to encourage research utilisation. Many approaches to introducing research utilisation fail to address the organisational culture and the interaction of the individual within it. Furthermore, most seem to take a top down centralised approach to research utilisation and EBP initiatives (single loop learning) which is unlikely to lead to sustained and widespread practice changes (French 1996). Most initiatives have taken a single topic on which to focus the development of research-based practice, yet such an approach does not seem to have a wider impact in the organisation. The findings of this study suggest that research utilisation requires a whole system shift to a culture where research is valued, and used, by both practitioners and managers. This wholesale culture shift might be achieved within the Clinical Governance initiative.

Whilst such a substantial culture change (for some hospitals) is proposed along with provision of degree-level education for nurses in order to promote research utilisation, the findings of this study suggest that such initiatives would be worthwhile. The promotion of research utilisation in nursing is crucially important given the sheer numbers of nurses in the health services and the amount of nursing care delivered. The potential for impact upon health outcomes could be enormous.

It has been argued that decentralised management within a flexible, organic organisational culture is required for research utilisation. This type of culture creates

a committed, motivated, autonomous, accountable practitioner who is enabled to question current ways of working, and seek solutions and innovations themselves, and in so doing, utilise research in their practice.

## **IMPLICATIONS OF THE STUDY FOR PRACTICE**

### **Education**

There needs to be provision for nurses to take part in higher education programmes at degree level in order to equip nurses with the knowledge, skills and the self-confidence for research utilisation. This requires both commitment and resources.

The question of whether nursing should become an all-graduate profession may be raised by this study. However, there was evidence (in the interview data) that both non-graduate nurses and care assistants benefited from a critical mass of graduates within a ward setting in terms of research utilisation.

### **Organisational Culture**

The change, for some hospitals, to a more organic and decentralised form of management requires new ways of working to be developed and new types of leadership. Managers need preparation for a new style of management. Such changes in management style are also required for Clinical Governance to be successful and might be subsumed in these developments. Managers and Charge Nurses also need to provide support for research utilisation itself. Therefore they will also need to have the knowledge and skills to search, appraise and utilise research.

At ward level, the Charge Nurse needs to recognise their role in shaping the ward culture and being an expert role model for practitioners. Leadership skills of Charge Nurses may also require further development to transmit the organic, decentralised style of management to ward level.

The system of delivering nursing care in the ward is the responsibility of the Charge Nurse. Systems of nursing that promote individualised care and individual responsibility for care by nurses enable autonomous practice and research utilisation.

### **Hospital Size**

Particular attention might be given to larger hospitals (>500 beds) to facilitate a culture shift to decentralisation; they will have a greater tendency toward centralisation and mechanistic types of organisational culture.

### **Clinical Guidelines**

Nurses must take a full and active role in guideline development and audit to ensure appropriate development of them and to facilitate implementation through ownership. Locally developed guidelines must be implemented in light of individualised and expert patient assessment and in discussion with patients thus retaining autonomy for individual patient care.

### **Economic Evaluation**

The impact of research utilisation on effectiveness and efficiency has to be assessed along with health outcomes. Whilst economic evaluation of research utilisation in medicine is now a major part of a national Research and Development programme (NHS Executive 2000) to date it has been the subject of only one study in nursing. This study of the effectiveness and cost effectiveness of audit and feedback and educational outreach in implementing change to research-based practice by community nurses began reporting results in April 2001 (Cheater 2001). The economic evaluation of the data was not complete at the time of writing. However, the preliminary results of this study demonstrated no significant differences in the care delivered by nurses who received single or multiple combinations of audit, feedback and educational outreach and the care delivered by nurses in the control group who had no input. There was no improvement in patient symptoms nor any increase in compliance with interventions for patients of nurses in the experimental groups. The author concludes that whilst educational outreach may be effective in

changing doctors' prescribing and prevention interventions so that they become research-based, that it perhaps not suitable for complex nursing interventions (Cheater 2001).

Whilst not all aspects of research utilisation may lead to cost savings, indeed some may cost more than current practice, increases in effectiveness and perhaps efficiency should result if practice can be based upon sound research findings.

## **SUGGESTIONS FOR FURTHER RESEARCH**

### **Organisational Culture**

This study identifies organisational culture as potentially the most important variable in influencing research utilisation yet the interaction of the individual with the organisation may be a crucial factor in creating the culture to promote research utilisation. There appears to be a lack of research in this area and, indeed, Estabrooks (1999b) believes that the most important deficiency in research utilisation research seems to be in studying organisational culture. Further research is needed to test out the propositions in this study and to compare to studies in other countries. The introduction of Clinical Governance in the UK provides a timely opportunity for this. There are also several hospitals in the UK that are now looking for accreditation as 'Magnet' hospitals. It has been proposed that these types of hospitals have many of the characteristics of the culture required for research utilisation and study of them in this respect may be enlightening.

There is a need to study the mechanisms by which hospitals as organisations shift their culture more toward an organic decentralised one. The approach to such a transition could be studied and recommendations made to others about to plan changes.

This study has shown a difference in research utilisation between medical and surgical wards but was unable to reach any clear conclusion as to why surgical nurses



have higher research utilisation. Further research may illuminate differences between the two types of wards and indicate conditions in surgical wards that promote research utilisation.

### **Health Outcomes**

This study fails to address the impact of research utilisation on health outcomes for patients. No studies of research utilisation have attempted this. In order to further justify calls for research utilisation in nursing such studies would seem essential.

### **Measuring Research Utilisation**

Valid and reliable measures of overall levels of research utilisation are under-developed. The approach used in this study (modified from Brett 1986, 1987, 1989) has to be re-contextualised and validated each time it is used and does not necessarily balance the different types of utilisation. One current study of research utilisation nursing decision making is using observation as one of its methods. However, this study is yet to report its findings and whilst it does not set out to develop such a methodology, the study may shed light on this type of approach (Thompson 2000).

### **Research utilisation in a wider context**

The findings of this study relate only to nurses in general medical and surgical wards. Further research is needed in other types of wards and in Primary Care settings. Multidisciplinary studies might elucidate the way that hospital staff interact and make decisions about research utilisation.



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## APPENDIX 1

### Published papers from the research project –

#### **Rodgers (1994), Rodgers (2000a), Rodgers (2000b).**

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

Rodgers SE (2000a) The extent of nursing research utilization in general medical and surgical wards *Journal of Advanced Nursing* 32(1):182-193

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Rodgers SE (2000b) A study of the utilization of research in practice and the influence of education *Nurse Education Today* 20, 279-287

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## An exploratory study of research utilization by nurses in general medical and surgical wards

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### An exploratory study of research utilization by nurses in general medical and surgical wards

An exploratory study into research utilization is described. Firstly an agreed definition of research utilization was arrived at through consultation with a range of nurses in both academia and clinical practice. Potential factors that may influence research utilization were identified through a review of current research on research utilization and through a period of fieldwork carried out on two hospital wards in Scotland. The findings indicate that research utilization appears to be a complicated issue and cannot be decontextualized or fractionated in order to lead to an understanding but must address multiple factors simultaneously. This paper refers to research that may be utilized in clinical nursing *practice* rather than in education or nursing management. The impact of research in clinical practice on education and nursing management is not discounted but the focus of this study is on the influence that research may have on the actual delivery of patient care and, in this sense, education and management developments are encompassed.

### INTRODUCTION

The fundamental purpose of nursing research is to improve the quality of patient care through provision of knowledge for practice and incorporation of substantiated and relevant research into practice. However, our knowledge of the extent to which nurses currently utilize research in their practice, and of what factors significantly promote or discourage this, is limited (Armitage 1990). Most research has focused on the characteristics of individual nurses rather than of the organization in which the nurse is working (Champion & Leach 1989) and most neglect to take into account the characteristics of the research findings or innovations themselves.

One cannot assume that dissemination equals utilization. A rational-empirical strategy does not take into account the complexity of the work of nurses. It also assumes that nurses are able to make free choices in the delivery of patient care, and neglects the inter-disciplinary nature of and organizational complexities in health care.

There are many examples in the literature of the seeming

lack of utilization of research by nurses (Walsh & Ford 1989, Hunt 1981, Gould 1986) but there is little supporting evidence and many anecdotes. Most research to date has been carried out in the USA.

Champion & Leach (1989) surveyed a convenience sample of 59 nurses from the south-west part of the United States. The nurses were asked to rate their agreement with 10 statements about research use, such as 'I apply research results to my own practice'. The mean for this 10-item 5-point Likert scale was 3.48 indicating, on average, a slight agreement with statements concerning use of research in practice. Champion & Leach interpret this as a moderate commitment to using research in practice, yet the mean response falls only half way between the categories 'neither agree or disagree and agree'. Modal values may have been more enlightening.

Brett (1987) surveyed 279 nurses on their level of adopting 14 nursing practices. On average, 70% of the nurses were aware of the practices and 58% were persuaded of their usefulness. The level of adoption varied according to the nursing practice concerned. However, another way of

presenting the figures might suggest that research utilization was less extensive. Four of the nursing practices were used sometimes and only one (closed sterile urinary drainage) was always used. Therefore nine of the practices were infrequently being used by the nurses.

Coyle & Sokop (1990) surveyed 200 nurses in North Carolina using the same instrument as Brett (1987) and achieved a response rate of 56%. Over half of their respondents were aware of nine of the 14 innovations and over half of the sample reported utilizing eight of the 14 practices at least sometimes. However, up to 72% of the nurses were unaware of an individual nursing practice.

### Californian nurses

Bostrum & Suter (1993) surveyed approximately 7000 nurses in California and achieved a response from 1588. The survey included demographic data, attitudes to nursing research, the research environment and the extent of involvement with research. This final scale included use of research findings in clinical practice. Respondents were asked whether they had made any research-based practice changes in the past 6 months (current involvement) and if they had made research-based practice changes in the past (more than 6 months ago). A total of 15.9% reported they had used research to change a nursing practice recently and 23.4% had made such a change in the past. A further study by Rizzuto *et al.* (1994) used the same instrument and a similar methodology surveying 4000 nurses. Of the 1217 respondents, 24.6% reported using findings as a basis for changing practice at some time, and 21% were currently doing so. The level of research-based practice appears lower than that found by Brett (1987) and Coyle & Sokop (1990) but it may be that nurses were not aware that their practice was research-based. Also the nurses were only asked about changes in practice and not existing practice that was research-based.

All these surveys rely on self-reports of nursing practice which may be unreliable. Also the response rate in some of the surveys has been low, resulting in potential bias of the sample responding, although this has been acknowledged by the authors. None of the studies has taken into account the attributes of the research findings themselves. Some research findings may be more attractive to nurses for example, because of a technological component or because they do not have resource implications. Only one attempt to generate this type of data for UK nurses has recently been reported (Lacey 1994).

### Research utilization in the United Kingdom

Two studies of research utilization have been reported in the UK using different methodologies compared to the studies above. Hunt (1987) employed an action research approach to study a process involving nurse teachers,

charge nurses (head nurses) and nurse managers in attempting to translate research findings into practice. She found that nurse teachers found it difficult to develop the level of critical ability required to evaluate the research reports found in the literature search and that the process was highly time consuming. One of the nursing practices reviewed was mouth care. In attempting to introduce research-based practice, the involvement of other agencies within the hospital besides nursing was found to be just one of the organizational barriers to change.

The existing processes for negotiating these changes were found to be cumbersome and time consuming.

(Hunt 1987)

Moreover, not all charge nurses conformed to the agreed changes in practice despite being involved in the policy decision and change in supplies. In the second nursing practice — pre-operative fasting by patients — catering and medical staff proved co-operative, but nurses found the disruption to their routine unacceptable and difficult. In conclusion, the conservative impulse of the nurses was profound and was not overcome by awareness of research-based reasons for practice. The nurses viewed themselves as victims of change rather than initiators and lacked confidence in making individualized decisions about patient care.

Reliance on established routines would appear to be a means of keeping control and stability in unpredictable and ever changing conditions.

(Hunt 1987)

Armitage (1990) set up a small working group of charge nurses and staff nurses to examine the extent of research utilization and explore problems and issues affecting research utilization in practice. They found that little research was being used in practice and, where it was used, it was done so without much understanding. The group were also hampered by their lack of critical reading skills and found the literature they offered to colleagues was not seen to be useful. It was concluded that the nurses had to identify their own problems and search for the solutions themselves rather than be provided with potential solutions to problems that were not perceived to exist or to be important.

There are many debates as to who and what is responsible this apparent failure to utilize research: is it the practitioners for failing to be able or willing to read, believe and implement findings, the researchers for failing to identify relevant areas of research and failing to disseminate research findings to practitioners in a readable and understandable form, or the 'organization' or the 'system' in failing to support, encourage and reward nurses for innovative research-based practice? These arguments are based on a simplistic understanding of research utilization, that if researchers conduct and publish research,



practising nurses will read it and use it. Clearly this is not the case nor does it advance our understanding of the complexities of the situation.

### Influencing factors

Coyle & Sokop (1990) found that research utilization was associated with attendance at conferences, reading a particular nursing journal, *Heart and Lung*, whilst a greater job satisfaction correlated with higher research utilization scores.

Bostrum & Suter (1993) found research utilization to be most closely linked with 'collecting research data' and 'collaborating in research with others' and less associated with attitude toward research, nursing education, position or experience. Rizzuto *et al.* (1994) observed that research activities in general were most closely associated with the number of research courses attended, awareness of research supports and a positive attitude toward research. However, research utilization was only one of 12 factors determining 'research activities' and there is no analysis specifically in relation to research utilization, yet the nurses did report that it was one research activity that was of particular interest to them.

Few nurses in the study were interested in conducting their own research. More were interested in collaborating with others in conducting research and in applying findings to practice... Nurses' readiness to attempt research collaboration and application of findings suggests the need for administrators to establish mechanisms to assist these nurses to carry out their intentions.

(Rizzuto *et al.* 1994)

Funk *et al.* (1991) surveyed 5000 nurses and achieved a response from 40% (1989). Of the nurses, 924 were selected for inclusion in the analysis as they reported their primary job function as clinical. The nurses were asked to choose the three greatest barriers to research utilization and to specify things that might facilitate the use of research in practice. They were also asked to rate 28 items according to the extent that they were perceived as barriers to research utilization. The two greatest barriers were found to be the nurses' feeling that they did not have enough authority to change patient care procedures, and that there was insufficient time during working hours to implement new ideas. They also cited administrators, physicians and other staff as not being supportive. Significantly, all eight items that related to characteristics of the setting were rated among the top 10 barriers. The nurses also reported that, on average, they would meet with some 15 different barriers when attempting to change practice on the basis of research findings. They suggested that research utilization would be facilitated by increasing administrative support and encouragement, improving the accessibility of research reports and enhancing the knowledge base of the practising nurse. Clearly, organizational

and environmental issues were the most important factors in hindering research utilization.

### Significant supporters

Champion & Leach (1989) found that perceived support, in general, was not associated with research utilization, but that support of the director of nursing, the unit director and the chairperson was significantly correlated with research utilization. It would appear that these were key people for the nurses in this study. Perceived availability of research findings (having time to read research-based literature at work, having conducted research and having research reports easily available), were strongly correlated with research utilization. Perceived attitude to research was also strongly correlated but it is unclear whether a positive attitude to research leads to use of findings or whether use of findings leads to a positive attitude. Strategies for developing a positive attitude may be difficult to put into practice and to evaluate. However, Champion & Leach (1989) did find association between undergraduate research courses and a positive attitude to research that was not evident in the case of graduate research courses.

It has been proposed that change to research-based practice may be effected through changing hospital policy and procedure (Edwards-Beckett 1990, Keefe *et al.* 1988, Riesch & Mitchell 1984). However, Brett (1987) found that existence of a hospital policy bore no relationship to adoption of a research finding. Yet where nurses perceived that a policy existed, they were more likely to be using research-based information in practice. Whether belief that a policy exists leads to adoption or whether adoption of the practice leads to a belief concerning a policy is unclear. When the smaller hospitals were studied separately, more policies were associated with lower levels of research utilization, suggesting that increased centralization of authority over nursing practice may not lead to practice development.

Brett (1986) also found that research utilization was directly related to the size of the hospital. In larger, urban hospitals where extensive communication channels and research resources were available, nurses were less likely to utilize research. Nurses in smaller, rural hospitals with similar communications channels and research resources were more likely to utilize research. In small hospitals, there was a positive correlation between adoption of innovations and being involved with the conduct of research and having a high exposure to nursing journals. However, in the large hospitals, all categories of potential influencing factors (including access to conferences, availability of time for study, exposure to publications, existence of research posts and committees, incentives for and involvement in research) were found to be negatively correlated. There were no significant relationships to

adoption of innovation scores in medium-sized hospitals. Size of organization and perhaps location were major influencing factors.

However, there is no evidence that the existence of mechanisms such as journal availability, libraries, conferences and research posts were actually used by and affecting nurses at ward level in any of the hospitals. It would seem that mechanisms designed to create a climate for research utilization, such as nurse research posts, attendance at conferences and access to journals, may be introduced, but that complicated organizational factors may be more important in influencing large-scale changes. Moreover, size and complexity of an organization might negate any positive influences of the potential influencing factors examined in this study.

Insight might therefore be gained by viewing research utilization as a process of organizational change when referring to hospital nurses. MacGuire (1990) argues that intentional organizational change involves a great deal more than modifying attitudes and behaviours of individuals. The influence and interaction of organizational factors at hospital and ward level, characteristics of individuals and research findings/innovations themselves on research utilization, are yet to be explored in the UK.

## THE STUDY

The study was exploratory in nature, leading to the development of a large-scale survey of research utilization in Scotland. The aims of this exploratory phase were the development of a methodology to measure and record the use of research findings by nurses and relevant factors influencing this process and to gain a deeper understanding of the multi-dimensional nature of research utilization. A literature search was conducted as part of this study and to inform the development of a questionnaire. A period of fieldwork was also undertaken in order to gain insight into the factors influencing research utilization by nurses in general medical and surgical wards. This paper focuses on the outcomes of the fieldwork.

### Research question

The research question to be answered was, 'what factors may influence the utilization of research findings by nurses in general wards?'

### Method

A pre-requisite of the study was the development of a working definition of research utilization through a literature search and through consultation with experts both in academia and clinical practice. Innovations in clinical practice are frequently centred around new equipment or technology that does not challenge current practices.

Studies of research utilization have traditionally focused on the adoption of such innovations and neglected the impact of research that may inform and enlighten practice.

### Definitions

A search of the literature uncovered definitions ranging from the abstract, to several pages describing what appeared to be more of a model for research utilization (Horsley & Crane 1983, Meyer & Goes 1988). However, broader definitions seemed to encompass some of the complexities of nursing research utilization and a draft definition for the purposes of this exploratory study was then circulated to 'experts' for comment.

A further draft was then sent out as part of a consultation exercise to a total of 41 nurses comprising academic staff, directors of colleges of nursing, representatives of professional bodies, and to nurses at a pilot site hospital including mainly clinical staff and some senior managers. A response rate of 73% (30/41) was achieved.

Research utilization was defined as a process directed toward the transfer of research-based knowledge into nursing practice. Research-based knowledge results from corroborated studies and may be of (a) direct use — explanatory and predictive findings immediately applicable to practice, (b) indirect use — enlightening, extending understanding of practice, (c) methodological use — measurement scales, outcome measures or tools that may be used in practice (Horsley & Crane 1983, Tierney 1991).

## LITERATURE REVIEW

A broad literature search was carried out covering the past 10 years using mainly Med-Line, searching on key words such as 'utilization' and 'research', 'innovation' and 'adoption'. Nursing research texts and theses were also reviewed.

A total of 2682 journal papers was reviewed, 78 of which were found to be directly relevant to this study. Only eight of these were research reports, two of which were based in the UK (Hunt 1987, Armitage 1990). Another four studies were carried out in the US (Funk *et al.* 1991, Champion & Leach 1989, Coyle & Sokop 1990, Brett 1986, 1987, 1989), with a further three studies being recently reported (Bostrum & Suter 1993, Lacey 1994, Rizzuto *et al.* 1994).

## FIELDWORK

Because of the lack of substantive previous work in this area, a period of fieldwork as a socially organized and contextually oriented period of participant observation was carried out to provide insight into UK clinical nurses' perspectives on factors affecting research utilization. One week was spent on a surgical ward, and 1 week on a medical ward. Techniques used included informal discussion,

critical incident technique (Flanagan 1954) and a daily log of reflections.

During the first few days, the study was explained in more depth to the nurses, which had the advantage of prompting them to think about research utilization before any interviews were conducted. It also allowed time for staff to become familiar with the researcher, to be reassured about the researcher's outsider status and the anonymity of all comments, and for the researcher to gain an understanding of the context.

Trained nurses working on the wards, including the charge nurse and the nurse manager of the wards, were asked to describe a positive or negative experience following a situation where research either helped them or caused them problems in their work. Some nurses found the critical incidents difficult to relate to, but most responded with examples of possible solutions for problems encountered in the wards, in part by seeking out research reports. Factors reported as influencing research utilization were collated from informal discussions and interviews with these nurses. A total of 13 interviews was conducted. The influencing factors were then classified into emergent themes. (These themes were then used to classify the factors from the literature search to facilitate comparison.) A note was kept of the frequency with which factors were mentioned, but no attempt was made to give 'weightings' to any of them. Emphasis was not put on the frequency counts as the technique of analysis was not rigorous enough for this. The frequency count was not in any way intended to represent a hierarchy of importance in influencing factors reported.

## FACTORS INFLUENCING USE OF RESEARCH

A summary of some of the most frequently mentioned factors thought to influence research utilization is presented here.

### Studying and reading

Many nurses of all grades stated that they did not have enough time (both on and off duty) to go to the library to read and study. Several expressed a desire to go to libraries after work but mentioned that they were often exhausted at the end of a shift or that the library hours were inconvenient.

Literature searches are very time consuming and I am so tired by the end of the shift. Going to the library and reading should be made part of the working day.

Location of the library was also criticized as being off site, but the range of journals and the cataloguing and searching facilities were thought to be good. The limitations on study leave both in terms of days off and payment of fees were

felt to restrict opportunities for development. The nurses stated that attending study days and courses was an excellent way of finding out about research findings and new ideas in nursing. Some nurses had experience of the provision of journals at ward level which was thought to be particularly helpful.

### Journal papers

Criticisms were made of the reporting of research. The poor quality of papers in the popular nursing press reporting on practice related nursing research was one of the most frequently mentioned criticisms. However, also mentioned was that there are too many articles and journals available and that the language used in some articles was difficult to read and understand and did not give succinct summaries.

### Organizational issues

Bureaucracy or 'red tape' and working with many other disciplines were thought to be some of the most important hindering factors. Staff were frustrated by the perceived lack of co-operation from managers and particularly medical colleagues, in thwarting their efforts to put innovations into practice. Policies and procedures were also thought to be too restrictive, but nurses also cited themselves in that they tended not to question current or traditional practices. The nurses felt that top down change was a hindrance, whilst the senior managers felt that change to research-based practice should come from the staff themselves.

Some nurses thought that management by non-nurses was particularly restrictive as these managers' comprehension of a nursing perspective was thought to be poor. The nurses felt they had difficulty in making a case to these managers for changes in practice to enhance or maintain quality in a climate of cost containment. Poor staffing and a lack of continuity of staff had been experienced by some nurses as contributing to thwarting their efforts at practice innovation.

Managers can offer staff alternative solutions but cannot make decisions for them. There is increasing professional responsibility, a lot of which rests with the ward leader who needs to encourage and motivate staff.

Managers are mainly concerned with budgets and are increasingly non-nurses. They are not concerned with developing professional care; nurses need more of a professional voice.

### The nature of research

The nurses provided few comments on this topic but did refer to needing the implications for practice to be made clear. They reported but did not agree with the perception

that research is only for medical or academic staff and is concerned with technology-oriented practice. They did, however, feel that this was perceived as a negative influence for some nurses.

### Ward-based issues

Time to reflect on practice and the creation of an open atmosphere for discussion were frequently mentioned as helping to translate research findings into practice. The nurses also felt that ward-based teaching for *trained* staff would help them to use research in their practise. The need for a strong charge nurse to lead and motivate staff was also mentioned. This appeared to be helpful not only internally within the ward, but having an assertive, articulate charge nurse was thought to 'cushion' the ward staff from external happenings and give them good representation outwith the ward. Patient-centred practice was also thought to be a positive influencing factor whereas nurses felt that, in other wards, the patients were seen as work units and the aim of care was to get through the work as fast as possible. This was thought to repress any ideas of creative or innovative practice.

### Professional issues

The Post-Registration Education and Practice (PREP) proposals (UKCC 1990) were thought to be a positive step toward research-based practise. The nurses stated that professional autonomy was important for practice innovation and that lack of autonomy and authority were significant barriers. They also mentioned a lack of education in the basic training specifically in self-directed learning skills.

Some staff are just doing a job, they're not really interested. You have to continually develop and not just stop when you qualify. Perhaps PREP will change things.

### Personal beliefs and issues

Nurses did not mention personal characteristics but rather personal beliefs and values. They felt that research findings were often disbelieved or simply discounted if they were not congruent with beliefs held by nurses. They also mentioned fear of taking risks associated with trying out new ideas. It was easy and safe to follow ritualistic practice and several respondents reported lack of faith in their own judgement. Many thought that there was a lack of motivation or energy for change which the utilization of research findings often involves.

People will say they believe in something, or they would like a certain type of care for themselves or one of their family but then do something very different (for a patient). There seems to be two sides of the brain, one thinks, one does.

Staff don't like to make decisions — it's too risky. They don't want to take any chances.

## DISCUSSION

The nurses favoured attending study days and courses, perceiving this as an excellent way of finding out about research findings and new ideas in nursing. It might be that the nurses felt comfortable and able to learn from a familiar didactic approach whilst neglecting self-directed learning. Self-directed learning skills were cited by Hunt (1987) as necessary for practice development. However, it might simply be that nurses enjoyed the stimulation of meeting other nurses at such events. When questioned further on the value of study days, the nurses said it was mostly the opportunity to focus on and discuss an issue or practice away from the pressures of the ward.

It seems odd that nurses found research articles difficult to read, but thought that articles in the popular nursing press were of poor quality and too broad ranging. It would appear that they wanted journals reporting research in a specific clinical area, with clearly written articles that focused less on establishing methodological rigour and more on significance for practice. This perhaps reflects a lack of ability in understanding and critiquing aspects of methodology which was clearly expressed by some of the nurses and found by Armitage (1990) to be a major limiting factor in implementing research.

The way that research articles are written can sometimes make them very difficult to read. Do they set out to confuse and amaze you?

### Dichotomy with regard to responsibility

The nurses appeared to be expressing dichotomy with regard to responsibility for practice innovation. Ward nurses felt they were constrained by the hierarchy, were without the support of managers and lacked the authority to bring about changes in practice. However, nurse managers expressed the view that practice innovation was the responsibility of ward nurses (particularly the charge nurse). Devolving responsibility without authority is not only disempowering but also frustrates efforts to move towards research-based practice. Managers cannot entirely avoid responsibility in this area, as nurses in this and other studies (Funk *et al.* 1991, Armitage 1990, Hunt 1987) have repeatedly cited a lack of management support as problematic. The constituents of such support are difficult to determine, but seem to be that of facilitation — providing access to ongoing education, for instance — encouraging staff to take ideas forward, representing staff within the bureaucracy and devolving authority for action with regard to patient care to the ward nurses. Armitage (1990) suggests that managers can act as catalysts in research utilization,



including an expectation in job descriptions and as part of annual review. She also recommends that managers deal with resource implications including staffing levels, as nurses may often feel guilty taking study leave if they know that there is no replacement for them on the ward. Management support would seem to be crucial to research utilization.

The nurses appeared to see one aspect of the charge nurse's role as smoothing the interface between professional practice at ward level and the bureaucratic demands of a hierarchical organization. Hospitals, as large organizations, have as their goals the smooth and efficient running of the hospital and control of a large number of staff, whereas the nurse has individual patient needs as her/his priority. This inevitably leads to tension and can severely limit autonomous professional practice unless the charge nurse is able to absorb such pressures at ward management level.

The task is to manage the gap between the needs of the organization and the demands of professional practice for autonomy.

(Johns 1990)

Professional practice was a recurrent theme. The nurses felt that when nursing care was patient-centred they were able to practice at a higher level, making decisions about individual patients' care rather than following routine or ritual. However, they also felt that nurses did not like decision making and sometimes preferred to follow routine and ritual because it was 'safe'. The fear of making mistakes was overwhelming and underpinned by a punitive attitude to errors. A supportive collegial atmosphere is essential if mistakes errors or omissions are to be addressed constructively. Nursing might then become more tolerant of human fallibility and recognize the importance of learning from and dealing with errors in a constructive manner. Otherwise any attempts to introduce new practices and move towards professional practice may be stifled.

The influencing factors described in the literature were classified into the themes emergent from the fieldwork, thus enabling comparison between the two. Almost all influencing factors identified in the fieldwork were supported by existing research. Not all previously identified factors were found during this fieldwork. This is perhaps not surprising due to the small size and exploratory nature of this study. However, it is interesting that the two existing UK studies (Hunt 1987, Armitage 1990) felt that an identified facilitator for change was crucial to the utilization of research, but there was no mention of this by any nurses in this study during the fieldwork.

Nurses consistently reported that they required a strong, committed, professional, democratic leader (in the form of the charge nurse) in order to provide the motivation, support and resource to help them solve their own problems. They also felt that more autonomy could be

given to staff at ward level — the power and freedom to act — whilst also reducing the bureaucracy. They recognized that they needed further education and managerial support to develop professional autonomy and accountability and so to improve their position in multi-disciplinary relationships and the quality of nursing care delivered.

#### *Lack of co-operation*

Multi-disciplinary work has been emphasized as the way forward in health care yet nurses in this study reported that other disciplines could be unco-operative and hinder nursing practice changes. Perceived lack of support and co-operation by other staff has also been reported by nurses in other studies (Funk *et al.* 1991, Hunt 1987). However, when this group of 'other staff' was approached in Hunt's study, they were found to be co-operative.

Perhaps the covert message to nurses is to meet the organizational goal: the smooth and efficient running through routine and procedure and ultimately cost containment. Perhaps some nurses' perceptions of these groups of other staff were created by their own feelings of powerlessness. Empowerment for professional practice may well be crucial to the development of research-based practice. Feelings of powerlessness were also expressed by nurses in Hunt's (1987) study, which may be compounded by increasingly complicated, burdensome, time-consuming and bureaucratic change processes.

#### CONCLUSION

Research utilization appears to be highly complicated, incorporating issues such as autonomy and empowerment of clinical nurses, organizational issues, opportunities for staff development, motivation and job satisfaction, the reporting of research, multi-disciplinary relationships, and the role of the charge nurse, to name but a few.

There is limited information about the extent of research utilization in the UK. Whether research utilization is a problem or not is difficult to judge since there is no evidence as to the extent to which nurses base their practice on research. What little research there is, is predominantly North American and any application to other countries must be made with caution. It seems clear that there is a need to look not only at the extent of research utilization in the UK but also at the factors that promote and act as barriers to research utilization.

It may be tempting to look at discrete factors influencing utilization but it seems that the interaction of multiple factors in influencing research utilization may be of overriding importance.

There is much speculation about strategies to improve research utilization (Bircumshaw 1990, Wright & Dolan 1991, Wilson Barnett *et al.* 1990), but until we are sure whether this is a real issue in the UK, and until we know

what factors may influence research utilization, we can only address a hypothetical problem with hypothetical solutions.

### Further study

The results have indicated some potential influencing factors that may be worth exploring with a larger, more representative group of nurses. From the findings of this study, a questionnaire has been developed for nurses to self-report the extent of research-based practice and the presence of identified influencing factors. This questionnaire will be used as a part of a main study which aims to demonstrate the status of nursing research utilization in Scotland which is as yet unknown. If positively and negatively influencing factors can be identified, then sound and valid strategies to promote positive factors and reduce negative ones can be employed to facilitate research-based practice by nurses. The potential impact of research-based nursing practice on standards and quality of patient care should not be underestimated.

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## The extent of nursing research utilization in general medical and surgical wards

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### The extent of nursing research utilization in general medical and surgical wards

There has been extensive speculation about the lack of research utilization in nursing but little attempt to quantify this phenomenon outside of North America. The current demands for evidence-based practice necessitate research utilization as one element of the process. As part of a larger project, this study aimed to describe the extent of research utilization by registered nurses in general medical and surgical wards in the Scottish Health Service. A postal survey was conducted for nurses to self-report their level of utilization of 14 research-based practices. The 14 practices represented examples of direct, indirect and methodological utilization of research. A research utilization score was constructed for each of the 14 practices and a total mean score constructed for all 14 practices. A random two-stage stratified sampling resulted in a total sample of 936 nurses from 25 hospitals. A 73% response rate was achieved. The total mean research utilization score for all nurses across all 14 nursing practices suggests that on average, nurses had heard, believed in and were beginning to use the practices. The sampling technique over-represents nurses in large hospitals and charge nurses, hence a weighting calculation on all scores was completed. There was little difference in weighted and unweighted scores. Scores on individual practices ranged from 60% (405/680) of nurses never having heard of a practice to 85% (574/680) always using a practice. This approach provides a valid and reliable method of assessing the extent of nursing research utilization. In several of the practices, nurses are making significant attempts at research-based practice. The level of research utilization compares favourably with research completed in North America and provides a baseline for United Kingdom and other country studies.

**Keywords:** nurses, nursing, research utilization, research-based, evidence-based, medical, surgical, practice

### INTRODUCTION

The development of evidence-based practice, including the utilization of research, has generated a great deal of interest in all areas of the health services during the last decade. Previously, the dissemination and utilization of research was seen very much as an individual responsibility but the

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outcomes were haphazard and ineffective (Department of Health 1995). A view now exists that for effective and efficient patient care, and for nursing to move further towards professional practice, nursing must become research based. Whilst there has been extensive speculation about ritualistic practice in nursing (Walsh & Ford 1989) and the lack of research utilization (Hunt 1981, 1996), little empirical evidence exists to support these assertions.

## LITERATURE REVIEW

In 1991 the first strategy for research and development (R & D) for the National Health Service (NHS) in the United Kingdom (UK) (Department of Health 1991) was published, reflecting the need for rationalization and addressing the lack of strategic planning in health services research. This was set against a background of diminishing resources but expanding need, a rapid growth in technology, and consumer demands for accountability and service provision (Luker & Kenrick 1995, Colyer & Kamath 1999). Effectiveness and efficiency thus became central driving forces in the health services although the research evidence on which to base effective practice may still be lacking in many areas (Robinson 1987, McIntosh 1995, Mulhall 1995).

Changing practice on the basis of one study no matter how well conducted would be foolhardy (McIntosh 1995) but many studies in nursing have been small-scale studies often conducted as higher education course requirements, with little attempt at replication (English 1994). In some areas of practice, the lack of synthesis of research findings is beginning to be addressed by the information strategy proposed in the R & D strategy (Department of Health 1991). Systematic reviews are being undertaken in discrete clinical areas such as prevention and treatment of pressure sores, whilst research using randomized controlled trials is subject to meta-analysis.

## Defining research utilization

A definition of research utilization was taken from an earlier exploratory study (Rodgers 1994). The utilization of research includes the direct implementation of research findings into practice, the indirect use of research in creating new understanding or being illuminating and the incorporation of methods or tools of research into practice. Whilst such a definition is considered useful for the purposes of this study, it may be limited in terms of the utilization of health services research in influencing policy matters.

## A model of research utilization

Rogers' (1983) model of diffusion of innovations provides a useful framework for the study of research utilization

and has been subject to scale development. Rogers describes a 5-step innovation decision process moving from becoming aware of an innovation, being persuaded of the value of it, deciding to try out the innovation and then implementing the innovation fully into practice. This is followed by a stage of confirmation where the use of the innovation is revisited and either confirmed or rejected in the light of new evidence. Unplanned dissemination is clearly accounted for with a focus on interpersonal channels of communication. The model also allows for non-linear progression and acknowledges the indirect utilization of research.

## The extent of research-based practice

Much of the early work on nursing research utilization originated in North America. Ketefian (1975) found extremely limited use of research in the recording of oral temperature whilst Kirchoff (1982) found that many nurses continued with practices shown to be ineffective by research. Two major projects, WICHE (Krueger *et al.* 1978) and CURN (Horsley & Crane 1983) focused on organizational strategies to promote the implementation of research but were partly hampered by the lack of high quality studies on which to base practice and by the need for wide dissemination. A small survey by Champion & Leach (1989) found a slight tendency for nurses to agree with statements about using research in practice.

Two larger surveys (Bostrom & Suter 1993, Rizzuto *et al.* 1994) asked nurses about changes in practice based on research. Between 16% and 21% had recently made such changes, whereas around 25% reported having done so at sometime in the past. However, the response rates for these studies were only 23% and 40%, respectively, and relied on the nurses' ability to distinguish research-based and non-research-based practice. A later study by Brown (1997) found that 69% of a sample of nurses attending a symposium stated they had applied research to practice. However, there must be doubt about the perception of research use and the use of a convenience sample.

All other North American studies of the extent of research utilization have surveyed nurses using the approach developed by Brett (1987, 1989) based on Rogers's (1983) model of the diffusion of innovations. In Brett's approach, a range of relevant, supported or replicated nursing research findings that could be implemented independently by individual nurses and have been published in nursing journals are selected. Nurses are then asked to self-report on the extent to which they are aware of, persuaded by, use sometimes or always use these findings. Scores for each stage of utilization are generally assigned as in Table 1. A total mean research utilization score (RUS) for all the findings or practices is usually given. This approach does not rely on nurses distinguishing between research-based and

**Table 1** Level of research utilization scoring (RUS) system

Level of utilization	Score	Cumulative score
Aware	1	1
Persuaded	1	2
Use sometimes	1	3
Use always	2	4

Maximum possible score for each nursing practice and for total mean RUS on all 14 practices = 4 (aware, persuaded and always use).

non-research-based practices but still has the limitations of being a self-report of practice.

Following the research by Brett (1987, 1989), a replication study was conducted by Coyle & Sokop (1990) with further studies being conducted by Varcoe & Hilton (1995), Michel & Sneed (1995) and Rutledge *et al.* (1996), although these later studies modified either the scoring system or the nursing practices to ensure relevance to the population. One European study with midwives has also been conducted using this approach (Berggren 1996). Comparative results (where possible) are given for these studies and the findings of the study reported in this paper in Table 2. There was little variation in the results between studies apart from the study by Berggren (1996) where the use of practices 'at least sometimes' seems comparatively low. Rutledge *et al.*

(1996) found oncology nurses made more use of research findings, although in calculating their total mean RUS they only included nurses who had responded to, or were at least aware of, all eight practices. Very few of the practices included in these studies are of indirect use and practices were often deliberately chosen so that they could be implemented independently by the nurse which limits the generalizability of the results.

In the UK, studies evaluating the extent of research utilization have taken a variety of approaches including studying utilization of a single practice, an action research approach, or investigating the perceptions of nurses about the extent to which their practice is research based.

#### *Utilization of a specific practice*

All three studies using this approach have been with community nurses. Luker & Kenrick (1995) evaluated the impact of an information pack on leg ulcer management in a pre- and post-test study on the knowledge scores of community nurses. They found a significant increase in the knowledge scores of nurses receiving the pack whilst there was no change in the scores of a control group. Williams & McIntosh (1996) evaluated the uptake of a research-based information and support package for use by practice nurses with patients who had abnormal cervical smear results. The response rate to the questionnaire evaluating use of the package was low but 58% of those who received the package made use of it. The lack of utilization of the package was thought to be due to lack

**Table 2** The utilization of specific research-based practices in comparative studies

Author	Brett (1986)	Coyle & Sokop (1990)	Michel & Sneed (1995)	Varcoe & Hilton (1995)	Berggren (1996)	Rutledge <i>et al.</i> (1996)	Rodgers (present study)
<i>n</i> (response rate)	278 (63%)	113 (56%)	157 (84%)	183 (42%)	84 (74%)	1100 (NA)	680 (73%)
Context	USA, med/surg & critical care	USA, med/surg & critical care	USA, Sigma Theta Tau members	Canada med/surg & critical care	Sweden, midwifery	USA, oncology	Scotland, UK, med/surg
No. of practices of which 50% or more of nurses were aware	10/14	9/14	– (total of 5 practices)	–	10/14	8/8	13/14
No. of practices of which 50% or more of nurses were persuaded	7/14	8/14	–	–	8/14	–	13/14
No. of practices used at least sometimes by 50% or more of nurses	10/14	8/14	–	9/10	4/14	–	11/14
No. of practices used always by 50% or more of nurses	2/14	0/14	–	–	3/14	–	6/14
Percentage of nurses unaware of some practices	66%	72%	–	–	83%	47%	60%
Total mean adoption/research utilization score (max. score 4, always use)	2.17	1.96	2.21	2.15*	2.06	3.33**	2.65

– no data available; \*max. score of 3 (always use); \*\*includes only 330 nurses who responded to all eight practices; NA = not applicable.

of time and incentives to use it. McDonnell *et al.* (1997) surveyed the extent to which 1187 practice nurses (a 60% response rate) made use of research-based practices in their care of patients to prevent cardiovascular disease and strokes. The median research utilization score was 19 on a potential range of 0–23. The study though is limited in that the validity and reliability of the instrument were not well established and the authors suggest that the results may over-estimate the level of research utilization.

#### *Action research*

Studies using an action research approach have addressed the change to research-based practice rather than estimating current levels of research utilization. Hunt (1987) set up an action research project to address the problem of research utilization in the areas of mouth care and preoperative fasting. Despite the involvement of clinical staff, there was only very limited success, with a scanty uptake of new mouth care practices and no change in preoperative fasting regimes. Pearcey & Draper (1996) encountered a similar lack of progress in their study to introduce research-based practice in preoperative information giving. No protocols were produced although the authors argue there may have been individual indirect use of research findings; however, this was not followed-up in the study.

#### *Perceptions of research-based practice*

Lacey (1994), using a questionnaire developed by Champion & Leach (1989), found nurses tended to agree that they were utilizing research in their practice. The validity of this self-report was argued to be established by nurses giving examples of practices they used which were based on research during interviews. Parahoo (1999) assessed 1368 nurses' perceptions of frequency of research utilization. Thirty per cent of nurses who had completed a new system of training (Project 2000, UKCC 1986) and 36% of registered nurses (RNs) who had trained prior to the new system, reported using research frequently or all of the time. However, Parahoo acknowledges the limitations of the validity of this type of self-reporting and it is unclear whether the respondents included indirect forms of utilization in their understanding of the question.

Three other UK studies have used a variety of approaches to gain an understanding of the extent of research utilization. A study of nurses in Wales used a small working group to look for examples of research utilization (Armitage 1990). Few, if any, examples could be found and the little research that was being used was done without any real depth of understanding. Lacey (1996) found that 65% of nurses responding to a 6-month post-research course evaluation had in some way implemented proposals for change on the basis of research. However, no sample size is given and the response rate to the survey was only 52%. During interviews, Camiah (1997) found that research-based practice was perceived to exist in only

a very few areas, namely catheter care and pain control. Camiah (1997 p. 1201) concludes that:

Based upon the findings of the study, it appeared that there was a wide gap between what was practised on the wards and what was research based.

## THE STUDY

### **Aim/research question**

This paper reports one phase of a multiphase project in nursing research utilization which builds on a previous exploratory study (Rodgers 1994). Phase 1 of the project examined the extent of research utilization, phase 2 was concerned with the influence of the characteristics of the research findings themselves on research utilization and phase 3 explored multifactorial influences at both an organizational and individual level on research utilization. The extent of the influence of education on research utilization has been reported (Rodgers 2000).

Phase 1 of the project is reported here and was designed to answer the research question: To what extent is nursing research utilized by nurses in general medical and surgical wards in the Scottish Health Service?

### **Method**

A postal survey of registered nurses practising in general medical and surgical wards in Scotland was conducted for nurses to self-report their level of utilization of 14 identified nursing research findings. All questionnaires were treated confidentially and return of the questionnaire was taken as consent to take part in the study. Ethical approval was not required by the relevant committees as the research involved members of staff and was not considered controversial.

### **Questionnaire**

A questionnaire was developed based on the Nursing Practice Questionnaire designed by Brett (1987). Nursing research findings or practices were selected as being relevant to medical and surgical nurses in the UK, being supported by replicated and sound research, and being widely reported in a hand search of the previous 10 years of the two most popular nursing journals. A range of practices was selected to represent direct, indirect and methodological utilization of research. Whilst in previous studies of this kind practices have been selected for independent utilization by the individual, no such restriction was used here. It was felt that utilization of practices that required some form of co-operation from colleagues was equally valid to be assessed (see Table 3 for list of practices).

**Table 3** The 14 research-based nursing practices and the percentage of nurses at each level of utilization

(No.) Practice	% at each level					n
	Not aware (score 0)	Aware only (score 1)	Persuaded only (score 2)	Use only sometimes (score 3)	Use always (score 4)	
(1. D) 'Any type of antiseptic causes damage to the tissues and is not effective in reducing contamination. In general wards, it is recommended that all wounds are cleansed with normasol or normal saline 0.9%.'	16	0	2	8	74	676
(2. D) 'Wounds, both granulating and sloughy, that are covered with dressings which lead to a moist and occluded environment heal faster than those that are allowed to dry out.'	35	1	5	19	40	656
(3. M) 'Completing a pain assessment chart enables nurses to assess a patient's pain more accurately and so provide more appropriate pain relief.'	16	7	22	43	12	674
(4. D) 'Giving patients information preoperatively about pain and pain control methods leads to a reduction in pain during the postoperative period.'	19	<1	17	15	49	655
(5. D) 'Patients should be fasted for 4 hours in order to ensure an empty stomach prior to anaesthesia. Fasting for more than 6 hours can in itself lead to complications and discomfort.'	43	3	19	20	15	671
(6. D) 'Shaving leads to an increased rate of wound infection postoperatively. It is recommended that patients are not shaved or that hair is removed with clippers or depilatory cream. This leads to lower rates of wound infection postoperatively.'	37	5	28	14	16	659
(7. I) 'Nurses often find it difficult to communicate with dying people and few patients are satisfied with this area of care. Communication with dying patients should be recognized as one of the most important aspects of nursing care.'	4	<1	3	26	67	668
(8. I) 'There are several stages that dying patients may experience, for example, denial, anger. A knowledge of these can help the nurse understand a patient's behaviour and feelings.'	3	0	2	23	72	663
(9. D) 'For accurate recordings of oral temperatures using a mercury thermometer, the thermometer must be placed in the sublingual pocket for a minimum of 4 minutes.'	61	6	11	11	11	664
(10. D) '100% silicone catheters (rather than silicone coated or latex) are recommended for patients whose catheters are to remain in for longer than 6 weeks as they are less likely to block.'	27	<1	4	17	52	667
(11. D) 'Maintaining a closed drainage system for urinary catheters is one of the most important steps in the prevention of urinary tract infections in patients with indwelling catheters.'	4	<1	1	10	85	674
(12. D/I) 'The use of deliberative touch by nurses for therapeutic means (for example holding of hands or hugging) has been shown to promote psychological well-being in some patients.'	16	<1	5	51	28	680



Table 3 (Continued)

(No.) Practice	% at each level					n
	Not aware (score 0)	Aware only (score 1)	Persuaded only (score 2)	Use only sometimes (score 3)	Use always (score 4)	
(13. D) 'In general wards, handwashing should be carried out with liquid soap or antiseptic solution rather than with a bar of soap in order to reduce the risk of cross-infection.'	9	<1	2	12	78	676
(14. D) 'For effective patient teaching, information should be given using a planned and structured approach rather than being given opportunistically or in an unplanned way.'	28	<1	5	39	28	674

D = directly utilized; I = indirectly utilized; M = methodologically utilized. References for practices are given in Appendix 1.

For each practice, nurses were asked about their awareness, persuasion or belief in use of the practice, whether they used it sometimes or whether they used it always according to Rogers (1983) diffusion of innovation model. A research utilization score (RUS) was constructed in the same manner as previous studies (Table 1).

### Pilot study

A pilot study was conducted in one hospital with 23 nurses to assess the reliability and validity of the questionnaire. Whilst content validity was established through review by a panel of nurse researchers and teachers, the question of the validity of self-reporting behaviour remained. A staff nurse/research assistant was recruited to conduct follow-up interviews with nurses who had completed the pilot study to ask about their ability to self-report openly and honestly. All nurses felt that this was possible as the questionnaire was confidential and non-threatening but asked that a response option of 'not able to' be added to the question about use of the practices. Several felt that they would like to use a practice but were constrained in doing so, hence they felt uncomfortable saying simply that they never used the practice. Whilst responses of 'not able to' were recorded for analysis, they were scored as non-use in the calculation of the RUS.

In the main study, the reliability of the total mean RUS across all of the 14 practices was only 0.631 (Cronbach's alpha). This is perhaps not surprising in that the 14 practices were deliberately chosen to be diverse and represent all three forms of utilization and be across a range of clinical topics. The level of reliability was thought to be acceptable given that only inter-group comparisons were to be made in the data (Polit & Hungler 1995).

### Sampling

Cluster sampling was used in order to reduce the number of units or hospitals in which a sample frame had to be drawn up, whilst some stratification was also included to counteract the loss of precision or representativeness of the sample. By dividing the population into different groups on the basis of a characteristic which may affect the variables in a study, stratification ensures the sample is representative on that chosen characteristic (Arber 1993). Previous studies indicated a potential effect of hospital size on RUS (Brett 1986, Coyle & Sokop 1990) so this was used in the stratification. Stratification by staff grade was required for a later phase of the study.

An adequate sample size was required to minimize the standard error of the mean (SE) in order to make a reasonable estimate of the mean RUS of the population. As some analysis and description of the data was to be conducted by strata, minimum sample sizes for the subgroups determined the overall sample size. Fowler (1993) argues that whilst the precision of the sample increases steadily up to 150–200 cases, there are only modest gains beyond that point. A response from a minimum of 200 nurses in each hospital size group was therefore aimed for, which led to a greater proportion of small and medium sized hospitals being sampled initially in order to reach the target.

### Stage 1

All hospitals in Scotland with general medical and/or general surgical beds were identified (according to criteria given in the *Health Services Yearbook*, Howland 1994) and grouped by size according to bed numbers (see Table 4). One large and three small hospitals refused to take part in the study. First a random sample of around 50% of hospitals by size grouping was taken to ensure sufficient numbers of nurses for subgroup analysis



**Table 4** Multi-stage stratified sampling and response rates by hospital size

Hospital size	Large (>500 beds)	Medium (250–500 beds)	Small (<250 beds)	Total
Total no. of hospitals with general medical and surgical beds	17 (+1*)	10	22	49 (50*)
<i>1st stage sampling</i>				
No. of hospitals in random sample (% total in size group)	8 (47%)	6 (60%)	15 (68%)	29 (59%)
No of hospitals in random sample agreeing to take part (% total in size group)	7 (41%)	6 (60%)	12 (56%)	25 (51%)
Total no. nurses in sample frame	827	521	404	1752
<i>2nd stage sampling</i>				
50% or min. of 5 RNs in each sample ward incl. charge nurse for each ward (final percentage of nurses sampled from each ward)	453 (55%)	268 (51%)	215 (54%)	936 (53%)
Response rate	312	210	158	680
No. responding (%)	(69%)	(78%)	(73%)	(73%)

\*One large hospital used in the pilot study was excluded from the main study.

(Table 4). This excluded the one large hospital which had been used in the pilot study.

### Stage 2

A random sample of at least 50% of RNs in each medical and surgical ward (or a minimum of five per ward) was then taken. (The sample was stratified to include the charge nurse for each ward as a later phase of the study also required this data.) This resulted in a total sample of 936 nurses in 25 hospitals throughout Scotland which represents approximately 25% of the total population of RNs in medical and surgical wards.

### Data collection

Each hospital supplied a list of names of RNs in the medical and surgical wards so that questionnaires could be mailed directly to participants. Two further reminders, including a copy of the questionnaire, were sent to non-respondents. Despite the length of the questionnaire (14 pages) a response rate of 73% was achieved. The target of 200 responses from nurses in small hospitals was not achieved mainly due to the refusal to participate by three of these hospitals. However, as Fowler (1993) indicates a limited gain of precision beyond around 150 cases, a response of 158 was thought to be acceptable.

## RESULTS

Not surprisingly, the vast majority of nurses who responded to the questionnaire were female (94%) and the minority male (6%). Nurses came almost equally from teaching hospitals and non-teaching hospitals and from medical and surgical wards (Table 5). A greater proportion of nurses were from medium hospitals than large and small ones compared to the estimated population (Table 5). Fifty per cent of respondents were age 30 or under, 90% were 1st level RNs and 10% 2nd level RNs. Twenty per cent (136) were at charge nurse (CN) grade or equivalent and are over-represented due to disproportionate sampling.

The mean RUS for each nursing practice was calculated (Figure 1). Amongst the highest scoring practices were two which were chosen as examples of indirect use of research (communication with dying patients and the stages of dying). Whilst some of the lower scoring practices could be argued to require a significant level of co-operation from colleagues (pre-operative fasting and shaving), duration of thermometer placement for oral temperature recording was clearly the lowest scoring and could be implemented quite independently by a nurse. However, the majority of nurses (61%) were not even aware of the practice so could not begin to implement it.

Hospital type	Hospital size	Estimated distribution of nurses by hospital size in population	Ward type*
Teaching 349 (51%)	Large 312 (46%)	Large 2127 (57%)	Medical 359 (53%)
Non-teaching 331 (49%)	Medium 210 (31%)	Medium 868 (23%)	Surgical 302 (44%)
	Small 158 (23%)	Small 741 (20%)	Mixed 12 (2%)

**Table 5** Distribution of nurses by hospital and ward variables

\*Missing data  $n = 7$  (1%).

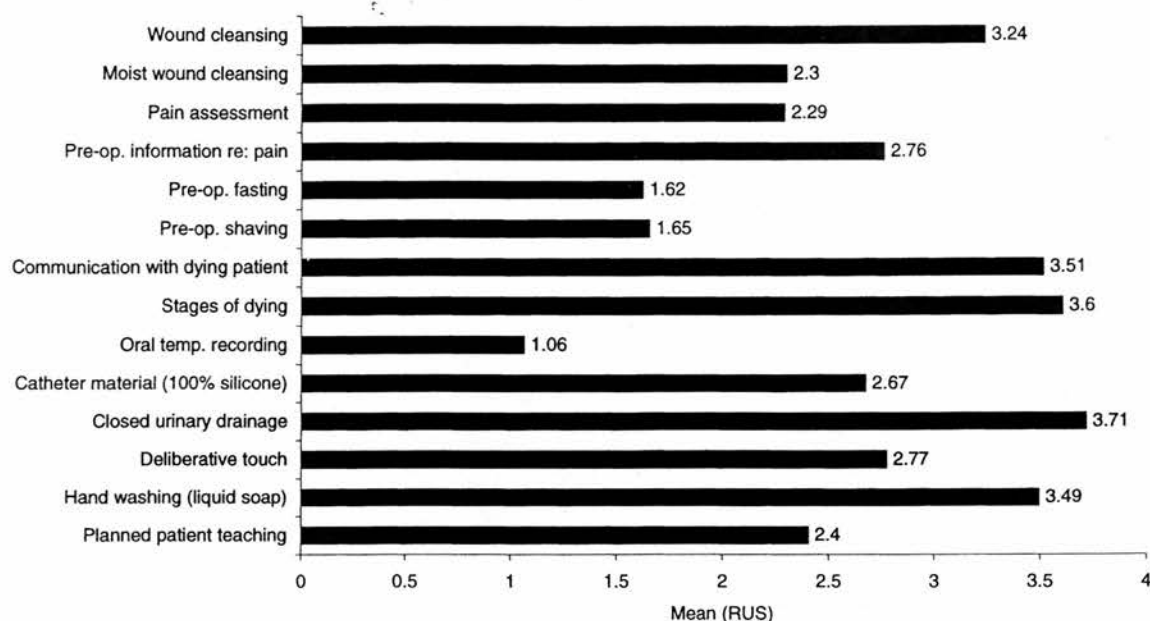


Figure 1 Mean research utilization scoring for each practice.

Non-linear progression through the stages of utilization was a possibility. Utilization without belief occurred for less than 1% of nurses in seven practices and less than 5% of nurses in six practices. In the remaining practice (deliberative touch) there was a significant degree of use without belief by 115 (17%) nurses.

The level of research utilization for individual practices ranged from 85% of nurses always using a practice (closed urinary drainage) to 78% of nurses never using a practice (oral temperature recording). The percentage of nurses at each stage of utilization is shown for each practice in Table 3.

Whilst 40% of nurses always used moist wound healing, a further 35% had never heard of the practice. For 10 of the practices, there were very few nurses (<1%) scoring only 1, i.e. they were aware of the practice but did not believe in its use. Between 3% and 7% of nurses were aware of the practices of pain assessment, preoperative fasting, preoperative shaving and oral temperature recording but did not believe that a nurse should use the practices. In general, most nurses used a practice at least sometimes once they believed in its use. The main exceptions to this were again pain assessment, preoperative fasting and shaving and also preoperative information-giving about pain and pain control. Nurses frequently replied that whilst they believed in the use of these practices (except pain assessment), they were not able to use them (72–89% of those believing but not using). Only half of those believing in but not using pain assessment ( $n = 71$ ) said that this was because they were not able to.

In order to compare the findings to those of previous studies, the number of practices where 50% or more of the nurses were aware, believed in, used sometimes or used always was calculated (Table 2) along with a total mean RUS for all nurses across all 14 practices (Figure 2).

Whilst the total mean RUS can clearly be argued to represent the sample (Figure 2), extrapolating the data back to the population required weighting calculations to take account of the disproportionate sampling of both the charge nurses (CNs) and of the nurses in different sizes of hospitals. There was, however, no significant difference in the total mean RUS of CNs (2.72 SD = 0.55) and all other RNs (2.63 SD = 0.58). There was also no significant difference in the total mean RUS of nurses from different sized hospitals (large 2.62, SD = 0.56; medium 2.68, SD = 0.58;

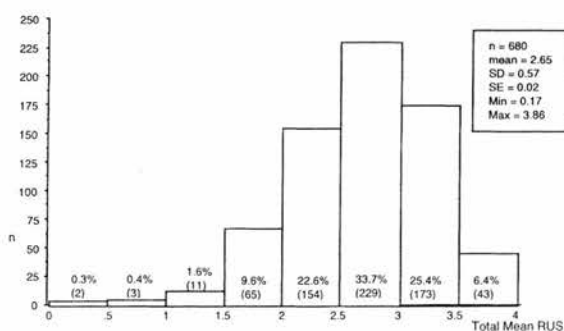


Figure 2 Distribution of total mean research utilization scoring for all nurses.

**Table 6** Weighted total mean RUS by hospital size

Hospital size	Weighted total mean RUS	SE	n
Large	2.616	0.03	312
Medium	2.698	0.04	210
Small	2.693	0.05	158
All hospitals	2.653	0.02	680

Unweighted means RUS for all nurses = 2.65.

small 2.67, SD = 0.59). Later analysis did reveal some association between number of beds and RUS. (The smaller the hospital, the higher the level of research utilization tended to be.)

The probability of the selection of the CN from each ward was one whereas only up to four RNs were selected from each ward. If there were 10 RNs and a CN the probability of selection of each RN would be 0.4. The scores of the nurses were thus weighted by the inverse of their probability of selection in order to ensure representativeness (Kalton 1983). A mean weighted RUS for nurses in each hospital size group was thus arrived at (Table 6). These scores were then further weighted according to the proportion of nurses in each hospital size group in the population to give a final weighted mean RUS for the population. The raw unweighted mean RUS was 2.65 (SE = 0.02) and the final weighted total mean RUS was also 2.65 (SE = 0.02). The effect of cluster sampling appears to have been counterbalanced by adequate stratification.

## DISCUSSION

### Limitations of the study

The tool to measure the level of research utilization does have some limitations in that the scoring system does not differentiate between being not able to use a practice and not wishing to use a practice. The tool may be less sensitive to the measurement of indirectly utilized research where it could be difficult to define exactly how the research impinges on patient care. Whilst attempts were made to ensure validity of the tool, it remains a self-report of practice.

The findings of the study may be generalized only to nurses in medical and surgical wards. A further limitation is that there was only a very small proportion of RNs in the study who had qualified under the new training system (Project 2000) as the new training was implemented somewhat later in Scotland than in other parts of the UK. A comparison between these nurses and those trained previously was not therefore feasible.

This study does not consider patient outcomes directly but assumes that there would be an improvement for patients receiving research-based care. Indeed, Peters (1992) suggests that we would only have to implement what we know from current health services research to give significant improvements in health without conducting any further research.

The 14 practices in this study cover a wide range of topics but reflect only a very limited part of nursing work. McIntosh (1995) argues that there is a lack of critical mass of research within many subject areas. This may be due in part to inadequate funding and lack of a career structure within nursing research (Mulhall 1995). Research is often short-term and not followed-up or developed leading to fragmented, shallow knowledge and a disparate literature (English 1994). There is, however, an information overload in some areas such as continence care and pressure area care but a dearth of research in others (MacGuire 1990).

All previous UK studies rely on the self-report of research utilization either in specific areas or more generally in terms of nurses' perceptions of whether their practice is research based or not, with little attempt at validation. In their study of community nurses, Luker & Kenrick (1995) found that nurses could not easily distinguish between research-based and practice-based knowledge seeing this as an artificial distinction. Whilst the validity of self-report was considered in this study, it might be preferable to conduct an observational study, although problems of observer interaction would then apply. It would also be extremely difficult to observe many aspects of the indirect utilization of research.

### Indirect utilization

It seems that the impact of the indirect utilization of research may have been underestimated. The two indirectly utilized practices (communication with dying people and stages of dying) in this study were among the highest scoring. It may be that nurses find these easier to put in to practice or feel that they were central to their nursing practice. Not only has this phenomenon been neglected in most earlier surveys of research utilization but also appears to be neglected by nurses themselves. All of the examples given by nurses in Lacey's (1994) study are of direct use. Alternative forms of research to the randomized controlled trial and experiment such as qualitative studies may contribute significantly in terms of indirect utilization of research (Hicks & Hennessy 1997). However, common criteria for evaluating such studies and synthesizing the results of several studies still need to be developed.

### Variations in the level of utilization among practices

Some studies of nursing research utilization have chosen to restrict their studies to practices that are implemented individually, but this seems to neglect the true complexity of many decisions concerning nursing practice. Rogers (1983) argues that variations in rates of adoption cannot be explained solely through individual behaviour but must take into account the social system of which that individual is a part. Whilst a lack of co-operation by others has been cited as one potential reason for the lack of utilization of some research (Hunt 1987, Camiah 1997), there were examples in this study of practices that could be used independently, and those that could be argued to require some co-operation from colleagues, both being under utilized.

It may be tempting to suggest a strategy that focuses on the dissemination of information and support for implementation of the lower scoring practices. However, Closs & Cheater (1994) believe that getting single aspects of research-based practice implemented is limited. A wider organizational strategy is required to make a culture shift to research-based practice as the norm.

Hunter & Polit (1992) argue that research tends to be used to support decisions already made, or that findings are extrapolated from one clinical situation to another without trials or evaluation (Peckham 1991). Clinical staff also tend to favour research on innovations rather than evaluating existing practices, or getting existing research into practice, as this may threaten what they already do. The attributes of the research findings or practices themselves may then have an impact on their utilization (Rogers 1983). This is addressed in a later phase of this study where the attributes of the 14 practices are assessed by a sub-sample of nurses and related to their RUS.

The time lag from reporting to utilization of research is not thought to be a significant factor as this study uses 14 of the most commonly reported research findings in general nursing in the UK. Whilst Landrum (1998) suggests a 8–30 years time lag to adoption, several of the practices in the study have been known for almost 30 years.

### Non-linear progression

Rogers (1983) model of innovation adoption was found to be useful with a linear progression throughout the stages of utilization from awareness to always using for the vast majority of nurses. A few nurses sometimes used practices whilst not being persuaded of the value of them but only in significant numbers for one practice — 'deliberative touch'. The majority of nurses used this practice sometimes yet many were clearly sceptical about its value. Brett (1987) also reports some use without belief but again for only a small percentage of nurses.

The vast majority of nurses who do not use practices they believed in said that this was due to them 'not being able to' for some reason rather than an unwillingness on their part to try out the practice. However, the one exception to this was pain assessment where around half of those who said they believed in the practice did not use it, even sometimes, although the reason for this remains elusive.

### CONCLUSION

The level of research utilization found in this study compares favourably to most earlier studies using a similar methodology, perhaps indicating a move towards research utilization among nurses over time. However, most other studies were conducted in North America, several with specialist nurses and midwives, or with a different set of nursing practices to suit the context.

Nurses in general medical and surgical wards are on average moving into the stage of using research in their practice at least some of the time. There are, however, variations in the level of utilization of individual practices. Taking indirect utilization into account acknowledges other forms of research and may have a significant impact on practice. The reasons why nurses are unable or unwilling to implement research in their practice requires further explanation.

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## APPENDIX 1. REFERENCES FOR THE 14 RESEARCH-BASED PRACTICES

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# A study of the utilization of research in practice and the influence of education

Sheila E. Rodgers

This paper reports part of a multi-phase study which aimed to investigate the extent to which nurses utilize research and to identify factors associated with research utilization. The findings presented examine the influence of education upon research utilization. Firstly, a survey of registered nurses working in general medical and surgical wards in Scotland was conducted. 680/936 (72.6%) nurses returned self-report questionnaires to measure the level of utilization of 14 research based practices and assess the presence of potential influencing factors. This was then followed up through interviews with a sub-sample of nurses. An association was found between a higher educational level and research utilization. The nurses reported that in courses as opposed to study days, they were expected to engage in study and read and complete course work whereas attendance at study days could be an entirely passive experience and was often more of a morale booster. Nurses who read at least one journal regularly, had had more study leave, or had attended research courses also had a higher level of research utilization.

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## Introduction

This paper reports a study of research utilization in nursing and examines the influence of education in this. Education is examined in terms of both level of academic achievement and in terms of specific research courses. Self-directed reading is also considered to form part of continuing professional education and hence is included here. Other initiatives to improve the utilization of research are not discussed but highlighted where relevant.

## Background

Whether education can be shown to affect practice changes is a thorny question which has been subject to review by several authors including Wood (1998). Rolfe (1993) believes that one cannot assume that new knowledge leads to

practice changes whilst Dyson (1997) anticipates that a gain in both knowledge and positive attitude should lead to an impact on practice.

Pearcey (1995) found that 78% of the 398 nurses responding to her survey, agreed that research findings could help improve their work. She also found that nurses who had attended research courses had a more positive attitude to research and felt they were more able to use research to improve care. In a comparison of nurses' pre and post research course attitudes to research, Dyson (1997) found a significantly more positive attitude after the course. Champion and Leach (1989) found that a positive attitude to research was highly correlated with self-reported perceived utilization of research but the validity of self report is not established.

It has been implicit in the above studies that gaining knowledge about and developing a positive attitude to research is the first step

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towards research based practice as described in Rogers (1983) model of innovation diffusion. In terms of the utilization of research, this involves becoming aware of research and, therefore, requires skills in searching, reading and appraising research literature. In the report of the task force on R&D, it was clearly stated that research literacy is needed before a move to research based practice can be made (Department of Health 1992).

Most UK studies on the effects educational preparation on the utilization of research are small scale but they do provide contextually based insight to the impact of education on research utilization. Lacey (1996) found that self-reported use of research in practice had occurred for 65% of nurses 6 months after taking a research course. Whilst self reports of changes in practice can have difficulty in achieving validity (Wood 1998) the nurses in Lacey's study could give clear examples of ways in which research was being utilized in practice. Armitage (1990) reports a study of a small working group in Wales who found very little research was being used in practice and what was used was done so without any real understanding. Nurses in the group then offered information on the research bases of practices but this was not accepted. Hunt (1987) formed small groups of a nurse manager, nurse teacher and a clinician to conduct an action research project in research utilization. The nurse teachers undertook literature searches, produced summaries and guidelines and held study days on two particular areas of research based clinical practice. Policy changes and changes in teaching followed yet not all Charge Nurses decided to follow the new practices despite being involved in the process of change. In a similar action research study, Pearcey and Draper (1996) also found that despite ward nurses being involved with identifying the need for change to research based practice and having an identified facilitator to help with this, they failed to produce any practice changes up to several months after the completion of the project.

North American research has tended to adopt a survey style approach and looked for associations between research utilization and educational preparation. Champion & Leach (1989), Coyle & Sokop (1990) and Varcoe & Hilton (1995) found no association between utilization of research and educational level. Brett

**Table 1** Level of research utilization scoring system

Level of utilization	Score	Cumulative score
Aware	1	1
Persuaded	1	2
Use sometimes	1	3
Use always	2	4

(Maximum possible score for each nursing practice and for total mean score on all 14 practices = 4 – Aware, persuaded and always use.)

(1987) and Ehrenfield & Eckerlings (1991) on the other hand, found that nurses with higher education degrees were more likely to use research findings and were also more able to cope with research activities and hold a positive attitude to research. Michel & Sneed (1995) studied graduate nurses and compared the level of research utilization of 1st degree level and Master's prepared nurses. Those of a higher educational level were found more likely to utilize research in their work but a large percentage of them were in non-clinical posts where it may be easier to utilize research in their more autonomous work environments.

There is conflicting evidence then about the effect of education on the utilization of research and little evidence originating from the UK or Europe. A study of research utilization was, therefore, conducted in the UK which included an examination of educational preparation.

## Methods

This paper reports the findings of some of the results of a multi-phase project in nursing research utilization conducted in general medical and surgical wards of National Health Service (NHS) hospitals in Scotland. The aim of the study was to identify the extent of research utilization, and identify factors influencing levels of research utilisation. The project was developed from an exploratory study in this area (Rodgers 1994). The study used the definition of research utilization as determined in the exploratory work to include direct, indirect or enlightening, and methodological utilization of research findings in practice.

The main part of the multi-phase project adopted a survey approach and used a postal

**Table 2** Correlations of educational characteristics of nurses with mean research utilization score (RUS)

Variable	Correlation coefficient	Significance level	n
Time qualified	$r=0.03$	NS	677
Age	$r=0.002$	NS	678
Highest qualification	$\rho=0.12$	$P<0.01$	646
No. study days attended (sq rt)	$r=0.095$	$P<0.05$	652
Time spent studying – on duty	$r=0.079$	NS	503
Time spent studying – off duty	$r=0.1$	$P<0.05$	580

questionnaire to measure levels of utilization of 14 identified research findings or practices and the presence/absence of identified influencing factors. The 14 research findings and influencing factors were identified in the earlier exploratory study which was felt to underpin the construct validity of the questionnaire. A research utilization score was constructed according to the level of adoption of the practice (Rogers 1983) in a similar manner to that used in other survey style approaches to the study of research utilisation in nursing (Brett 1987 & 1989, Coyle & Sokop 1990, Varcoe & Hilton 1995) (Table 1). Content validity was assessed by a panel of experts whilst the validity of self-reporting levels of research utilization was confirmed as part of a pilot study of the questionnaire with 20 nurses. Reliability of the mean research utilization score (RUS) over all of the 14 practices was not high with a Cronbach's alpha of 0.631. However, Polit and Hungler (1995) argue that a Cronbach's alpha of 0.6 to 0.7 is acceptable when only group comparisons are to be made in the data as was to be the case with this data. Sample size was estimated for a power of 0.8, and an alpha value of 0.05 based on earlier work by Brett (1986).

A random, stratified, 2 stage cluster sample of Charge Nurses and Staff Nurses was taken from all NHS hospitals in Scotland with general medical and surgical beds. A total sample of 936 nurses in 25 hospitals throughout the country resulted with 680 (72.6%) responding.

In a later phase, follow-up interviews were conducted with some of the Charge Nurses and Staff Nurses who had completed questionnaires ( $n=24$ ) and with their Directors of Nursing ( $n=7$ ). The main aims of the interviews were to explore and explain the relationships found in the quantitative data. Analysis of the data followed

and an editing analytic style using category development (Polit & Hungler 1997).

## Results

Of the 680 Charge and Staff Nurses who returned completed questionnaires 94% (637) were female and 6% (43) male. Nurses were typically aged 26 to 30 (29%/195), were 1st level registered nurses (90%/609) and were working as staff nurses (69%/472). Twenty percent (136) were at Charge Nurse grade or equivalent. Nurses had most often been qualified between 5 and 10 years (25%/167); however, there was no correlation between length of time qualified and mean RUS (Table 2).

## Studying and reading

The highest qualification achieved by the nurses ranged from registration only (64%/434), through Professional Studies I or II/Diploma level studies (20%/137) to a first degree (5%/37). Only one of the nurses was in possession of a Masters degree. Highest qualification correlated significantly with mean RUS in that a higher qualification was associated with a higher mean RUS (Table 2). The number of study days attended over the 12 months prior to the survey was very wide ranging (0 to 100 days). Most commonly, nurses had a maximum of 2 study days a year (41%/281) but there was a small but significant number of nurses who had been given leave for courses of more than 1 month's duration. After transforming the data (square root) a positive linear correlation with mean RUS was seen (Table 2). The types of study days most commonly attended are shown in Table 4. Around half of nurses (40%/272) spent at least 4 hours a month

**Table 3** Studying and reading: differences between sub-groups of nurses on mean research utilization score (all Mann Whitney U-test)

Variable		Mean RUS	SD	n (%)*	Test statistic	Significance level
Whether studied nursing research	- Yes	2.77	0.55	274 (40)	z= -4.44	P <0.01
	- No	2.57	0.59	385 (57)		
Taught a topic based on nursing research	- Yes	2.77	0.53	211 (31)	z= -4.93	P <0.01
	- No	2.51	0.56	197 (29)		
Journals read	Regularly	2.71	0.57	401 (59)	z= -2.98	P <0.01
	Occasionally	2.55	0.59	262 (39)		

\*Shown as % of total respondents n=680.

studying and reading off duty and a positive correlation with mean RUS was seen (Table 2).

Forty percent of nurses had studied nursing research at some time and these nurses had a significantly higher mean RUS than those who had never studied nursing research (Table 3). Thirty-one percent of nurses could recall being taught about a topic in nursing from the basis of a research study and its findings and these nurses had a significantly higher mean RUS than those who had never been taught in this way (Table 3). Just about all of the nurses (98%/663) said that they read a nursing journal at least occasionally with those who read regularly having a significantly higher mean RUS (Table 3).

### Resources for learning about research and research findings

The results for this section are given in Table 5.

About half of the nurses came from teaching and half from non-teaching hospitals. There was, however, no significant difference in the mean RUS for nurses in these two types of settings. Almost all the nurses worked in wards which were training areas for student nurses and again there was no difference in the mean RUS compared to those in non-training wards.

There was no difference in mean RUS between nurses who had access to a library with relevant nursing texts and journals and those who had no access. Thirty-four percent of the nurses said they had summaries or titles of recently published research articles circulated to their ward and

**Table 4** Types of study days attended in previous year

Type of study day	% attending*	Number attending
Hospital inservice	64.6%	439
Local study day	50.0%	340
Conference	25.7%	175
Part of course	19.6%	133
Private study day	15.6%	106
Other	6.6%	45
None	11.0%	75

\*As a % of all 680 nurses, many of whom attended more than one type of study day throughout the year.

these nurses had a significantly higher mean RUS compared to those who did not receive summaries. The 39% of nurses who were in wards that took one or more nursing journals had a significantly higher mean RUS than those on wards who did not take journals.

### Follow-up interviews: studying and reading

When asked about the relationship between higher levels of qualification and research utilisation, nurses talked about how higher education led to them become more able, knowledgeable, assertive and questioning.

Having done a Diploma and a Degree, you become more aware of the importance of research and it becomes second nature when



**Table 5** Resources for learning about research and research findings: differences between sub-groups of nurses on mean research utilization score (all Mann Whitney U-test)

Variable		Mean RUS	SD	n (%)	Test statistic	Significance level
Hospital type	Teaching	2.62	0.57	349 (51)	z= -1.48	NS
	Non-teaching	2.67	0.58	331 (49)		
Whether ward a nurse training area	- Yes	2.65	0.57	621 (91)	z= -0.95	NS
	- No	2.57	0.59	51 (8)		
Library Access	- Yes	2.66	0.58	612 (90)	z= -0.58	NS
	- No	2.59	0.58	46 (7)		
Circulation of research summaries to ward	- Yes	2.76	0.59	234 (34)	z= -3.37	P <0.01
	- No	2.61	0.56	383 (56)		
Whether ward gets nursing journals	- Yes	2.71	0.58	265 (39)	z= -2.68	P <0.01
	- No	2.6	0.58	384 (57)		

\*Shown as % of total respondents n=680.

you see something in the journals that seems like a well founded study and it's quite different from what's being used in the hospital, then you act on it. Before doing higher education I tended to go with the flow of the hospital. Higher education makes you more searching and try and improve the quality of the service. It makes you more questioning. (no 10 Surgical Staff Nurse)

Almost all nurses with degrees had been exposed to research based teaching. There was a consensus that being taught a topic on the basis of research enabled nurses to learn how to question, seek out evidence and evaluate the evidence for practice.

We were told why and who had proved this. We were given literature reviews and references which we had to follow up and present. You remember yourself and you don't rely on asking others but you go and look it up for yourself. (no 3 Medical Charge Nurse)

It could be argued that nurses with a questioning approach are the ones who put themselves forward for research courses or higher education but several nurses suggested that it was the effect of teaching that had altered their way of thinking.

Now you are made to seek out the research papers as part of courses. When you get used to the idea, it is better, but I had to change my attitude and get used to it. (no 18 Surgical Staff Nurse)

Study days were not seen as engaging and helpful for staff development in the same way as accredited courses. Being sent on a course was seen as a form of reward or encouragement.

You are more likely to go on study days but you don't have to do anything or even think if you don't want to, but in long term degrees and diplomas, you have to do assignments and you pick up lots of things because you're reading more. (no 17 Surgical Staff Nurse)  
Going on study days is good for morale more than learning. (no 24 Medical Staff Nurse)

Whilst all the Directors of Nursing were committed to supporting education, those from hospitals where nurses had a high mean RUS were especially committed in providing resources and had clear strategies for education.

If we identify a need for service development, I am strongly forceful to meet that need. Where there's a need there's always a way to

find money be it from the Trust, from Macmillan, from even our own income generation from National Study days. (Director no 4)

Directors from the lower scoring hospitals were more pessimistic, felt constrained by resources and had no obvious strategy for education.

### Follow-up interviews: resources

The higher scoring nurses talked about not only the availability of libraries, but specialist nurses, education and library staff who acted as 'information brokers' for them.

The librarian will copy papers and send them over. We get reading lists monthly and that triggers off what we send for. (no 11 Surgical Charge Nurse)

Not all nurses were so fortunate. One lower scoring nurse said:

It would help if there was more literature available, or someone finding it for us – we could really do with that. (no 19 Medical Staff Nurse)

One of the higher scoring nurses summarized the need for education resources thus:

Information has to be on site and easily available, a supportive team, on going education and someone to help find things in the library. (no 4 Surgical Staff Nurse)

Helping nurses to cope with the mass of information available, to find relevant and worth while material appears to be an important task.

### Discussion

The findings of this study are consistent with previous studies in research utilization in that personal characteristics such as age, gender and length of experience do not influence nurses' use of research in practice. Lacey (1994) reported that older nurses tended to have lower levels of research utilization but they also had less education so this may be a covariate.

The response rate to the questionnaire in this study was felt to be particularly good at 72.6% although the generalizability may be limited to nurses in medical and surgical wards. The

interviews enabled greater explanation of relationships in the data as cause and effect is difficult to establish in surveys. However, many of the statistically significant findings reflect quite a small difference in the level of research utilisation, and many of the correlations are low. Thus, the impact of several aspects of education on research utilization might be significant but are often small.

Formal education seems to have an affect upon research utilization in that taking a 'certified' course requires the individual to take an active part in learning, independent study and to produce assignments. Individual study days could be passive and viewed more as a reward or motivator. Lacey (1994) found that courses led to increased knowledge and improved morale but degree courses expected some engagement in some type of research. Both this study and that of Varcoe and Hilton (1995) found that nurses taking degrees would almost certainly be exposed to research based teaching. Closs and Cheater (1994) propose the teaching of topics throughout the curriculum from a research base as a means of both demonstrating the research base to practice and also to teach skills of critical appraisal. Such a form of teaching may be possible within a wider curriculum but discrete skills of accessing, critiquing and assessing readiness for implementation of research may need to be taught to a wider range of nurses through short courses. The lack of ability of nurses to critically evaluate reported research has been a consistent finding in studies of research utilisation (Hunt 1987, Armitage 1990, Pearcey 1995). A high level of skill is required to evaluate research literature in any area. Nurses must look at more than one study and have a range and depth of statistical skills, qualitative method, the ability to consult a theoretical background and the ability to synthesise knowledge from disparate fields (McIntosh 1995). Systematic reviews and meta-analysis have been proposed as means of dealing with the volume of literature in some areas, the inaccessibility of some research and the lack of skills to assess research. The information strategy produced as part of the NHS R&D programme (Department of Health 1991) included the setting up of the NHS Centre for Reviews and Dissemination (CRD) for systematic reviews, the Cochrane Collaboration for meta-analysis of randomized controlled trials and a



National Projects Register. Bulletins such as the Effective Health Care Bulletin, newsletters and patient information leaflets are produced by the centres to disseminate the findings of the reviews yet French (1996) believes that nurses, in general, are not using these new databases and that they are not widely available to all clinical staff in the Trusts. In a study of midwives, Meah et al. (1996) found that all of them knew about the Cochrane database but had difficulty gaining access to it. A further strategy to communicate the findings of research and overcome difficulties in reviewing the literature has been the development of research based clinical guidelines. However, whilst Duff et al. (1996) believe that a defining feature of clinical guidelines is that they are based on research findings, they may also be based on expert opinion. National government bodies and the Royal College of Nursing (RCN 1996) are involved in the production of clinical guidelines yet the impact of these on nursing practice is unclear. In a review of 91 studies of the introduction of clinical guidelines (NHS Centre for Reviews and Dissemination 1994) the vast majority of studies demonstrated that practitioners made significant moves towards giving care in line with the guidelines. However, most of the studies reviewed were not UK based (77/91) and all were concerned with medical and not nursing interventions. It seems that these strategies may supplement educational strategies or be taught to students as tools for research based practice but that use of them in isolation is unlikely to effect change in behaviour (Grimshaw et al. 1995).

The effect of higher education seems to have other outcomes for nurses in this study. In particular, they reported that following degree programmes they had a more questioning and analytical approach along with an increased confidence to question others and to implement the findings of research. Brown (1997) found nurses were increasingly involved and confident about research as their educational level increased from diploma to graduate levels. Kajermo et al. (1998) explain the increased confidence in terms of nurses feeling not only better prepared but also having a parity of education with medical staff. Nurses from a higher education background were less likely to see lack of cooperation by physicians as a barrier to research utilization.

Whilst there is an element of self selection for courses, it was clear from the interviews that nurses believed that the courses led to such changes and to an increasingly positive attitude. Marsh & Brown (1992) and Champion & Leach (1989) both found that nurses who had studied research or had studied at a higher educational level had more positive attitudes towards research. However, LeMay et al. (1998) found nurses' attitudes toward research were unchanged by a short course in research – it was positive both before and afterwards.

The support of nurse managers in providing opportunities for further education seems to be crucial. However, there was also a sense from the interviews that those Directors of Nursing who were committed in providing such opportunities were also highly committed to developing nursing in other ways which could have an equal if not greater affect on research utilization. Librarians and other 'information brokers' were felt to be important in providing summaries of recently published research to the wards which was helpful to them in dealing with the mass of literature. Certainly nurses in the wards that received summaries had a higher level of research utilization. However, this again may be reflection of the wider culture within the hospital which was supportive of research utilization. For example, in the hospital where nurses had the highest level of research utilization, the Director of Nursing took it upon herself to review and distribute research summaries to the ward staff. Not only is this of great practical help but must also communicate the value on research based practice to the ward staff.

Whilst most attention seems to be given to post-registration moves to improve critical appraisal skills and research utilization, there have also been recent attempts to improve the level of pre-registration education of nurses with the introduction of the 1992 programmes (P2000). Parahoo (1999) found that post-P2000 nurses were more confident in their ability to appraise research and utilize it than nurses from pre-P2000 courses. However, there was little difference in the self-reported perceptions of actual levels of research utilization in practice. Parahoo acknowledges the limitations of self-reports of research utilization and whilst this is overcome to some extent in this study by asking nurses about their use of identified research based practices,

there were insufficient numbers of post-P2000 nurses in the sample for any comparison.

## Conclusion

If one accepts that the ability to critically appraise research seems to be a pre-requisite to the utilization of research, the provision of courses to enable nurses to critically appraise the literature would seem to be essential. Taking part in higher education can not only achieve this but also makes nurses more questioning and can give them the confidence to take utilization forward. However, research utilization is also highly dependent on a culture that not only provides the resources for nurses to learn about research but is also supportive of its utilization.

In order for utilization of research to occur then, other pre-requisites apart from education must be in place (Nolan & Behi 1996). Not only must nurses have the necessary knowledge and skills to critically appraise research, but also feel that barriers to utilizing research can be overcome and that the utilization of research is being valued by others.

## Acknowledgements

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# The patient as 'teacher': learning in the care of elderly persons with dementia

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In 1996 HM Queen Silvia of Sweden started a non-governmental education programme with an integrated day-care unit devoted to elderly persons with dementia. A total of 18 Licensed Practical Nurses (LPN) from various parts of Sweden took part in the year theoretical and practical education in dementia care. The purpose was to develop specialized skills in the particular field and more generally to develop mentor capabilities. The aim of the study was to examine the experiences of the trainees, gained from following a single patient during their entire practical training period in the school's integrated day-care unit. The study was based on a combination of participant observations, interviews, diaries and recorded data and used an ethnographic approach. The results showed that themes such as 'personal guide', 'creating a relationship', 'reducing the working pace' and 'investigative mealtimes' were of major importance for the trainees' learning. In their role as 'personal guides', the trainees fell into six categories with different educational focuses. In their relationships with the patients, the trainees were able to form their own impressions of the patients' present and former lives. By training their ability to adapt the pace at which they worked, they had time to observe symptoms and be aware of the patients' needs, as well as the patients' signs of appreciation. The results also indicated that 'investigative mealtimes' can be an important element in the trainee's education in dementia care. © 2000 Harcourt Publishers Ltd

## Introduction

### General introduction

Treating persons with dementia properly requires an understanding of the illness and the individual behind it (Kitwood 1997). To handle the role of professional caregiver requires a basic knowledge of dementia disorders and their progression. In addition, the caregiver must have specific knowledge of the patient and his/her individual handicap and resources (Marcusson et al. 1995). Contact with elderly persons with dementia requires personal devotion. Several studies (Hallberg 1990, Asplund 1991, Jansson 1993) shows that nurses often have to deal with

behaviour that is difficult to interpret and with ethical conflicts in the relationships.

Providing skilful care requires that the caregivers delve deeper into day-to-day details and treat their profession as a mystery they are taking part in rather than a problem to solve (Norberg et al. 1992). Kihlgren's (1992) study indicates that patients in the care of staff with training in integrity-promoting care deteriorated less. When the caregiver communicated with the patient as a competent partner, showing humanity, respect and support, a level of intimacy developed that led to the patient displaying more ability. Can a teaching strategy where the trainee gets the opportunity to follow a

## APPENDIX 2

### Supporting research references for the 14 research-based practices

#### Practice 1.

Brennan SS Foster ME Leaper DJ (1986) Antiseptic toxicity in wounds healing by secondary intention. *Journal of Hospital Infection* 8(3) 263–267.

Leaper DJ, Simpson RA (1986). The effects of antiseptics and topical microbials on wound healing. *Journal of Antimicrobial Chemotherapy* 17(2)135–137.

#### Practice 2.

Eaglestein WH (1985) The effect of occlusive dressings on collagen synthesis and re-epithelialisation in superficial wounds. In: Ryan TJ (ed) *An environment for healing: the role of occlusion*. International Congress and Symposium Series No 88. Royal Society of Medicine – London p31–38.

Winter GD. (1995) Formation of the scab and the rate of epithelisation of superficial wounds in the skin of the young domestic pig. 1962 [classical article]. *Journal of Wound Care*. 4(8):366-7; discussion 368-71

#### Practice 3.

Cleminson F Sharp S (1986) Use of the London Hospital Pain Observation Chart. *Nursing - Oxford* 3(11):415-7.

Wright S (1988) Why use measurements? *Nursing Times* 84 (8): 73–75.

#### Practice 4.

Ashton M (1991) Read all about it. *Nursing Standard* 6 (2); supp. p10–11.

Bysshe J (1988) The effect of giving information to patients before surgery. *Nursing* 3(30); 36–39.

Hayward J (1975) *A prescription against pain*. London RCN.

#### Practice 5.

Hung P (1992) Preoperative fasting of patients undergoing elective surgery. *British Journal of Nursing* 1 (6); 286–287.

Thomas A (1987) Preoperative fasting – a question of routine? *Nursing Times* 83 (49):46–47.

#### Practice 6.

Viney C (1992) Pre-operative shaving in gynaecology. *Nursing Standard* 7 (8): 25–27.

Winfield D (1986) Too close a shave? *Nursing Times* 82 (10): 64–68.

#### Practice 7.

Webster M (1986) Care of the dying: easing emotional distress. *Nursing Times* 82 (44) 43–44.

Gooch J (1988) Dying in the ward. *Nursing Times* 84 (21); 38–39.

Saunders CM (1978) *The management of terminal disease*. London, Edward Arnold



Practice 8.

Barnard J (1985) Recognising grief. *Professional Nurse* Nov, p38.

Webster M (1986) Care of the dying: easing emotional distress. *Nursing Times* 82 (44) 43-44.

Practice 9.

Brown S. (1990) Temperature taking: getting it right. *Nursing Standard* - Special supplement Dec 12,(10)4-5

Closs SJ (1987) Oral temperature measurement. *Nursing Times* 83 (1); 36-39

Practice 10.

Blannin J, Hobden J (1980) The catheter of choice. *Nursing Times* 76(48):2092-2093.

Rowley P (1990) Catheter choice. *Nursing Standard* 5 (8) supplement 12-13.

Practice 11.

Barnett J (1991) Catheters – preventive procedures. *Nursing Times* 87 (10); 66-68.

Mullhall A; Chapman R; Crow R (1988) Catheters: the acquisition of bacteriuria; emptying urinary drainage bags; meatal cleansing. *Nursing Times* 84 (4); 61-69.

Practice 12.

Le May A (1986) The human connection. *Nursing Times* 85 (19); 42-44.

Turton P (1986) Touch me, feel me, heal me. *Nursing Times* 82 (47); 28-30.

Practice 13.

Blackmore M (1987) Hand-drying methods. *Nursing Times* 83 (37); 71-74.

Elliot P (1989) Infection control: to wash or not to wash? *Nursing Times* 3 (36); 20-23

Practice 14.

Close A (1992) Strategic planning in patient education. *Nursing Standard* 6 (43); 32-35.

Holland S (1986) Teaching patients and clients. *Nursing Times* 82 (49); 34-37.



## APPENDIX 3

### Questionnaire to Charge Nurses and Staff Nurses





RESEARCH UTILISATION IN NURSING PROJECT

QUESTIONNAIRE - to Charge Nurses and Staff Nurses

This questionnaire is part of a nationwide survey of nurses in general medical and surgical wards across Scotland. The project is funded by the Scottish Office Home and Health Department.

The survey has two main aims :

- To determine the extent to which nursing research is being put into practice.
- To identify characteristics that influence the successful implementation and integration of such research findings.

We are sending questionnaires to Directors of Nursing for information about the hospital, and to Charge Nurses and Staff Nurses to gain information about research in practice. In order for the survey to provide a true representation, we need to hear from everyone we write to. Completing the questionnaire should take about 20 minutes.

In the first part of the questionnaire, a total of 14 nursing practices or recommendations derived from published research findings are given. You are asked about your knowledge and use of these practices. Part II asks about you and your place of work.

*There are no right or wrong answers ; we are interested in your opinions and understanding, and would be very grateful for your help. The information you give will be treated in strictest confidence and your identity coded to maintain anonymity. No one will be able to identify you from the results of the survey.*

We anticipate that the results of the survey will be used to provide the nursing profession with information about the influence of nursing research on practice, and to suggest ways in which research utilisation may be improved.

You will have the opportunity to obtain feedback and further information about the project at a follow up conference in your area (date to be confirmed), when the results will be presented and relevant issues discussed. Please complete the conference slip, and details will be sent to you around June 1996.

In the meantime, if you have any queries please contact :

Penny Bond or Sheila Rodgers      Tel : 031 650 3892  
Research in Nursing Project  
Department of Nursing Studies  
University of Edinburgh  
40 George Square  
Edinburgh EH8 9LL

Please return your completed questionnaire and conference slip in the pre-paid envelope within the next fortnight.

**Thank you for your co-operation**

-----  
**CONFERENCE SLIP**

Please reserve me a place on, and send me details of the "Research Utilisation in Nursing" Conference.

NAME..... DAY TIME TELEPHONE.....

ADDRESS.....  
.....

"Any type of antiseptic causes damage to the tissues and is not effective in reducing contamination. In general wards, it is recommended that all wounds are cleansed with normasol or normal saline 0.9%."

1. Have you come across this recommendation?  
tick one box

YES  1  NO  2  UNSURE  3  
 if NO, please go to the next page    
 if UNSURE, please go to the next page

2. Where did you find out about this?  
tick all that apply

Through reading literature (such as journal articles, books, procedure manuals, circulars)    
 From attending a study day or conference    
 In training to become a registered nurse    
 From other sources (please specify)    
 Not sure where I heard about it

3. Do you believe a nurse should use this practice when cleansing wounds?  
tick one box

1 Yes  2 No  3 Don't know

4. Do you follow this practice when cleansing wounds?  
tick one box

1 Always  2 Sometimes  3 Never  4 Not able to

5. Are there any written policies or procedures recommending this nursing practice?  
tick one box

1 Yes (Hospital policy)  2 Yes (Ward policy)  3 No  4 Don't know

"Wounds, both granulating and sloughy, that are covered with dressings which lead to a moist and occluded environment heal faster than those wounds that are allowed to dry out."

1. Have you come across this recommendation?  
tick one box

YES  1  NO  2  UNSURE  3  
 if NO, please go to the next page    
 if UNSURE, please go to the next page

2. Where did you find out about this?  
tick all that apply

Through reading literature (such as journal articles, books, procedure manuals, circulars)    
 From attending a study day or conference    
 In training to become a registered nurse    
 From other sources (please specify)    
 Not sure where I heard about it

3. Do you believe a nurse should follow this practice when caring for wounds?  
tick one box

1 Yes  2 No  3 Don't know

4. Do you follow this practice when caring for wounds?  
tick one box

1 Always  2 Sometimes  3 Never  4 Not able to

5. Are there any written policies or procedures recommending this nursing practice?  
tick all that apply

Yes (Hospital policy)  Yes (Ward policy)  No  Don't know

"Completing a pain assessment chart enables nurses to assess a patient's pain more accurately and so provide more appropriate pain relief."

1. Have you come across pain assessment charts?  
tick one box

YES  1  if NO, please go to the next page

NO  2  if UNSURE, please go to the next page

UNSURE  3

2. Where did you find out about them?  
tick all that apply

Through reading literature (such as journal articles, books, procedure manuals, circulars)

From attending a study day or conference

In training to become a registered nurse

From other sources (please specify) \_\_\_\_\_

Not sure where I heard about it \_\_\_\_\_

3. Do you believe a nurse should use these charts when assessing pain?  
tick one box

Yes  1

No  2

Don't know  3

4. Do you use these charts when assessing pain?  
tick one box

Always  1

Sometimes  2

Never  3

Not able to  4

5. Are there any written policies or procedures recommending this nursing practice?  
tick all that apply

Yes (Hospital policy)

Yes (Ward policy)

No

Don't know

"Giving patients information pre-operatively about pain and pain control methods leads to a reduction in pain during the post-operative period."

1. Have you come across this information?  
tick one box

YES  1  if NO, please go to the next page

NO  2  if UNSURE, please go to the next page

UNSURE  3

2. Where did you find out about this?  
tick all that apply

Through reading literature (such as journal articles, books, procedure manuals, circulars)

From attending a study day or conference

In training to become a registered nurse

From other sources (please specify) \_\_\_\_\_

Not sure where I heard about it \_\_\_\_\_

3. Do you believe a nurse should follow this practice when giving pre-operative care?  
tick one box

Yes  1

No  2

Don't know  3

4. Do you follow this practice when giving pre-operative care?  
tick one box

Always  1

Sometimes  2

Never  3

Not able to  4

5. Are there any written policies or procedures recommending this nursing practice?  
tick all that apply

Yes (Hospital policy)

Yes (Ward policy)

No

Don't know

"Patients should be fasted for 4 hours in order to ensure an empty stomach prior to anaesthesia. Fasting for more than 6 hours can in itself lead to complications and discomfort."

1. Have you come across this recommendation?  
tick one box

YES  1

NO  2



if NO, please go to the next page



UNSURE  3



if UNSURE, please go to the next page

2. Where did you find out about this?  
tick all that apply

Through reading literature (such as journal articles, books, procedure manuals, circulars)

From attending a study day or conference

In training to become a registered nurse

From other sources (please specify)

Not sure where I heard about it

3. Do you believe a nurse should follow this recommendation when giving pre-operative care?  
tick one box

Yes  1

No  2

Don't know  3

4. Do you follow this recommendation when giving pre-operative care?  
tick one box

Always  1

Sometimes  2

Never  3

Not able to  4

5. Are there any written policies or procedures recommending this nursing practice?  
tick all that apply

Yes (Hospital policy)

Yes (Ward policy)

No

Don't know

"Shaving leads to an increased rate of wound infection post-operatively. It is recommended that patients are not shaved or that hair is removed with clippers or depilatory cream. This leads to lower rates of wound infection post-operatively."

1. Have you come across this recommendation?  
tick one box

YES  1

NO  2



if NO, please go to the next page



UNSURE  3



if UNSURE, please go to the next page

2. Where did you find out about this?  
tick all that apply

Through reading literature (such as journal articles, books, procedure manuals, circulars)

From attending a study day or conference

In training to become a registered nurse

From other sources (please specify)

Not sure where I heard about it

3. Do you believe a nurse should follow this recommendation when giving pre-operative care?  
tick one box

Yes  1

No  2

Don't know  3

4. Do you follow this recommendation when giving pre-operative care?  
tick one box

Always  1

Sometimes  2

Never  3

Not able to  4

5. Are there any written policies or procedures recommending this nursing practice?  
tick all that apply

Yes (Hospital policy)

Yes (Ward policy)

No

Don't know



"Nurses often find it difficult to communicate with dying people and few patients are satisfied with this area of care. Communication with dying patients should be recognised as one of the most important aspects of nursing care."

"There are several stages that dying patients may experience, for example, denial, anger. A knowledge of these can help the nurse understand a patient's behaviour and feelings."

1. Are you aware of this aspect of nursing care?  
tick one box

YES  1  NO  2  UNSURE  3   
if NO, please go to the next page  
if UNSURE, please go to the next page

1. Are you aware of this aspect of nursing care?  
tick one box

YES  1  NO  2  UNSURE  3   
if NO, please go to the next page  
if UNSURE, please go to the next page

2. Where did you find out about this?  
tick all that apply

Through reading literature (such as journal articles, books, procedure manuals, circulars)   
From attending a study day or conference   
In training to become a registered nurse   
From other sources (please specify) \_\_\_\_\_   
Not sure where I heard about it \_\_\_\_\_

2. Where did you find out about this?  
tick all that apply

Through reading literature (such as journal articles, books, procedure manuals, circulars)   
From attending a study day or conference   
In training to become a registered nurse   
From other sources (please specify) \_\_\_\_\_   
Not sure where I heard about it \_\_\_\_\_

3. Do you believe a nurse should use this knowledge when caring for dying patients?  
tick one box

Yes  1   
No  2   
Don't know  3

3. Do you believe a nurses should use this knowledge when caring for dying patients?  
tick one box

Yes  1   
No  2   
Don't know  3

4. Do you use this knowledge when caring for dying patients?  
tick one box

Always  1   
Sometimes  2   
Never  3   
Not able to  4

4. Do you use this knowledge when caring for dying patients?  
tick one box

Always  1   
Sometimes  2   
Never  3   
Not able to  4

5. Are there any written policies or procedures recommending this nursing practice?  
tick all that apply

Yes (Hospital policy)   
Yes (Ward policy)   
No   
Don't know

5. Are there any written policies or procedures recommending this nursing practice?  
tick all that apply

Yes (Hospital policy)   
Yes (Ward policy)   
No   
Don't know

"For accurate recordings of oral temperatures using a mercury thermometer, the thermometer must be placed in the sublingual pocket for a minimum of 4 minutes."

1. Have you come across this nursing practice?  
lick one box

YES  1       NO  2      if NO, please go to the next page  
 UNSURE  3      if UNSURE, please go to the next page

2. Where did you find out about this?  
lick all that apply

Through reading literature (such as journal articles, books, procedure manuals, circulars)   
 From attending a study day or conference   
 In training to become a registered nurse   
 From other sources (please specify) \_\_\_\_\_   
 Not sure where I heard about it \_\_\_\_\_

3. Do you believe a nurse should follow this practice when taking temperatures?  
lick one box

Yes \_\_\_\_\_  1  
 No \_\_\_\_\_  2  
 Don't know \_\_\_\_\_  3

4. Do you follow this practice when taking temperatures?  
lick one box

Always \_\_\_\_\_  1  
 Sometimes \_\_\_\_\_  2  
 Never \_\_\_\_\_  3  
 Not able to \_\_\_\_\_  4

5. Are there any written policies or procedures recommending this nursing practice?  
lick all that apply

Yes (Hospital policy) \_\_\_\_\_   
 Yes (Ward policy) \_\_\_\_\_   
 No \_\_\_\_\_   
 Don't know \_\_\_\_\_

"100% silicone catheters (rather than silicone coated or latex) are recommended for patients whose catheters are to remain in for longer than 6 weeks as they are less likely to block."

1. Have you come across this recommendation?  
lick one box

YES  1       NO  2      if NO, please go to the next page  
 UNSURE  3      if UNSURE, please go to the next page

2. Where did you find out about this?  
lick all that apply

Through reading literature (such as journal articles, books, procedure manuals, circulars)   
 From attending a study day or conference   
 In training to become a registered nurse   
 From other sources (please specify) \_\_\_\_\_   
 Not sure where I heard about it \_\_\_\_\_

3. Do you believe a nurse should follow this recommendation when considering choice of catheter?  
lick one box

Yes \_\_\_\_\_  1  
 No \_\_\_\_\_  2  
 Don't know \_\_\_\_\_  3

4. Do you follow this recommendation when choosing catheters?  
lick one box

Always \_\_\_\_\_  1  
 Sometimes \_\_\_\_\_  2  
 Never \_\_\_\_\_  3  
 Not able to \_\_\_\_\_  4

5. Are there any written policies or procedures recommending this nursing practice?  
lick all that apply

Yes (Hospital policy) \_\_\_\_\_   
 Yes (Ward policy) \_\_\_\_\_   
 No \_\_\_\_\_   
 Don't know \_\_\_\_\_

"Maintaining a closed drainage system for urinary catheters is one of the most important steps in the prevention of urinary tract infections in patients with indwelling catheters."

1. Have you come across this nursing practice?  
tick one box

YES  1       NO  2      if NO, please go to the next page  
 UNSURE  3      if UNSURE, please go to the next page

2. Where did you find out about this?  
tick all that apply

Through reading literature (such as journal articles, books, procedure manuals, circulars)  
 From attending a study day or conference  
 In training to become a registered nurse  
 From other sources (please specify) \_\_\_\_\_  
 Not sure where I heard about it \_\_\_\_\_

3. Do you believe a nurse should follow this practice when caring for patients with catheters?  
tick one box

Yes  1  
 No  2  
 Don't know  3

4. Do you follow this practice when caring for patients with catheters?  
tick one box

Always  1  
 Sometimes  2  
 Never  3  
 Not able to  4

5. Are there any written policies or procedures recommending this nursing practice?  
tick all that apply

Yes (Hospital policy)  
 Yes (Ward policy)  
 No  
 Don't know

"The use of deliberate touch by nurses for therapeutic means (for example holding of hands or hugging) has been shown to promote psychological well-being in some patients."

1. Have you come across this nursing practice?  
tick one box

YES  1       NO  2      if NO, please go to the next page  
 UNSURE  3      if UNSURE, please go to the next page

2. Where did you find out about this?  
tick all that apply

Through reading literature (such as journal articles, books, procedure manuals, circulars)  
 From attending a study day or conference  
 In training to become a registered nurse  
 From other sources (please specify) \_\_\_\_\_  
 Not sure where I heard about it \_\_\_\_\_

3. Do you believe a nurse should offer this practice when caring for patients?  
tick one box

Yes  1  
 No  2  
 Don't know  3

4. Do you offer this practice when caring for patients?  
tick one box

Always  1  
 Sometimes  2  
 Never  3  
 Not able to  4

5. Are there any written policies or procedures recommending this nursing practice?  
tick all that apply

Yes (Hospital policy)  
 Yes (Ward policy)  
 No  
 Don't know

"In general wards, handwashing should be carried out with liquid soap or antiseptic solution rather than with a bar of soap in order to reduce the risk of cross-infection."

1. Have you come across this recommendation?  
tick one box

YES  1       NO  2       UNSURE  3  
 if NO, please go to the next page  
 if UNSURE, please go to the next page

2. Where did you find out about this?  
tick all that apply

Through reading literature (such as journal articles, books, procedure manuals, circulars)       
 From attending a study day or conference \_\_\_\_\_  
 In training to become a registered nurse \_\_\_\_\_  
 From other sources (please specify) \_\_\_\_\_  
 Not sure where I heard about it \_\_\_\_\_

3. Do you believe a nurse should follow this recommendation when washing his/her hands?  
tick one box

1 Yes  
 2 No  
 3 Don't know

4. Do you follow this recommendation when washing your hands in the ward?  
tick one box

1 Always  
 2 Sometimes  
 3 Never  
 4 Not able to

5. Are there any written policies or procedures recommending this nursing practice?  
tick all that apply

Yes (Hospital policy)  
 Yes (Ward policy)  
 No  
 Don't know

"For effective patient teaching, information should be given using a planned and structured approach rather than being given opportunistically or in an unplanned way."

1. Have you come across this recommendation?  
tick one box

YES  1       NO  2       UNSURE  3  
 if NO, please go to the next page  
 if UNSURE, please go to the next page

2. Where did you find out about this?  
tick all that apply

Through reading literature (such as journal articles, books, procedure manuals, circulars)       
 From attending a study day or conference \_\_\_\_\_  
 In training to become a registered nurse \_\_\_\_\_  
 From other sources (please specify) \_\_\_\_\_  
 Not sure where I heard about it \_\_\_\_\_

3. Do you believe a nurse should follow this recommendation when giving patients information?  
tick one box

1 Yes  
 2 No  
 3 Don't know

4. Do you follow this recommendation when giving patients information?  
tick one box

1 Always  
 2 Sometimes  
 3 Never  
 4 Not able to

5. Are there any written policies or procedures recommending this nursing practice?  
tick all that apply

Yes (Hospital policy)  
 Yes (Ward policy)  
 No  
 Don't know

## Part II: About your place of work

1. Is your ward identified as any sort of speciality? -----  
please specify speciality

2. What type of ward do you work on?

tick one box

Surgical	1
Predominantly Surgical	2
Medical	3
Predominantly Medical	4
Mixed Medical and Surgical	5

3. Is your ward a training area for student nurses?

tick one box

Yes	1
No	2
Don't know	3

### About you

4. How old are you?

tick one box

21 to 25	1	41 to 45	5
26 to 30	2	46 to 50	6
31 to 35	3	51 to 65	7
36 to 40	4		

5. Are you male or female?

tick one box

Male	1
Female	2

6. Which qualifications do you have?

tick all that apply

RGN/SRN		Professional Studies I	
RMN		Professional Studies II	
RNMH		BSc/BA in Nursing	
RSCN		BSc/BA in other studies	
EN		MSc/MA in Nursing	
SCM/RM		MSc/MA in other studies	
RNT		Other (please specify)	
RCNT			

7. How long is it since you first registered or enrolled as a nurse?

tick one box

Under 6 months	1	Over 5 years, but under 10 years	5
6 months to 1 year	2	Over 10 years, but under 15 years	6
Over 1 year, but under 2 years	3	Over 15 years, but under 20 years	7
Over 2 years, but under 5 years	4	Over 20 years	8



**What is your job title?**

*tick one box*

Enrolled Nurse .....	<input type="checkbox"/>	1	Clinical Nurse Specialist .....	<input type="checkbox"/>	4
Staff Nurse .....	<input type="checkbox"/>	2	Senior Nurse/Nurse Manager .....	<input type="checkbox"/>	5
Sister/Charge Nurse .....	<input type="checkbox"/>	3	Other (please specify) .....	<input type="checkbox"/>	6

**What is your Clinical Grade?**

*circle one grade only*

I      H      G      F      E      D      C

**How long have you been working in your current ward?**

*tick one box*

Under 6 months .....	<input type="checkbox"/>	1	Over 2 years, but under 5 years .....	<input type="checkbox"/>	4
6 months to 1 year .....	<input type="checkbox"/>	2	Over 5 years, but under 10 years .....	<input type="checkbox"/>	5
Over 1 year, but under 2 years .....	<input type="checkbox"/>	3	Over 10 years .....	<input type="checkbox"/>	6

**On a scale of 1 to 6, what is your current level of job satisfaction?**

*tick one box*

Totally dis-satisfied

Completely satisfied

<input type="checkbox"/>	1	<input type="checkbox"/>	2	<input type="checkbox"/>	3	<input type="checkbox"/>	4	<input type="checkbox"/>	5	<input type="checkbox"/>	6
--------------------------	---	--------------------------	---	--------------------------	---	--------------------------	---	--------------------------	---	--------------------------	---

**Studying and reading**

**Is study leave available to you at the moment?**

*tick one box*

Yes .....	<input type="checkbox"/>	1
No .....	<input type="checkbox"/>	2
Don't know .....	<input type="checkbox"/>	3

**If Yes, what kind of study leave is available to you?**

*tick all that apply*

Paid leave .....	<input type="checkbox"/>	Fees or leave but not both .....	<input type="checkbox"/>
Unpaid leave .....	<input type="checkbox"/>	Travel paid .....	<input type="checkbox"/>
Fees paid .....	<input type="checkbox"/>	Don't know .....	<input type="checkbox"/>

**How many study days have you had in the last 12 months?** \_\_\_\_\_ days

**How many of these did you receive any leave or funding for?** \_\_\_\_\_ days

**What types of study days have you attended?**

*tick all that apply*

Part of a course (eg a degree course) .....	<input type="checkbox"/>	Local study days/courses .....	<input type="checkbox"/>
Private study day .....	<input type="checkbox"/>	None .....	<input type="checkbox"/>
Conferences .....	<input type="checkbox"/>	Other (please specify) .....	<input type="checkbox"/>
Hospital in-service .....	<input type="checkbox"/>		



7. Have you ever studied nursing research?

tick one box

Yes  1

No  2

if NO, please go to Question 20

Don't Know  3

if Don't Know, please go to Question 20

8. How did you study nursing research?

tick all that apply

As part of a course   
As part of a study day   
At a conference

As personal study   
Some other means (please specify)

9. If any of this study included information on how to make use of research findings in practice, please state which means of study.

If not, or you don't know, write in 'No' or 'Don't know'

10. If you can recall ever being taught about a topic in nursing from the basis of a research study and its findings, please specify the topic(s) below.

If not or you don't know, write in 'No' or 'Don't know'

11. On average, how long do you spend studying and reading, with regard to nursing, each month?

\_\_\_\_\_ Hours on-duty  
\_\_\_\_\_ Hours off-duty

Write in the hours spent both on- and off-duty

12. Do you have access to a library with relevant nursing texts and journals?

tick one box

Yes, within hospital  1  
Yes, off site  2  
No  3  
Don't know  4

13. Are summaries or titles of recently published research articles circulated to your ward?

tick one box

Yes  1  
No  2  
Don't know  3

14. Does your ward receive any nursing journals?

tick one box

Yes  1  
No  2  
Don't know  3

15. If Yes, do you read them?

tick one box

Yes  1  
No  2

**If you don't read nursing journals on the ward, is this because of...**

*tick all that apply*

...lack of time? .....	<input type="checkbox"/>
...restricted access to journals? .....	<input type="checkbox"/>
...no particular interest in them? .....	<input type="checkbox"/>
...other reasons? .....	<input type="checkbox"/>
(please specify) .....	

**Which nursing journals do you read?**

*tick one box for each journal*

	Regularly	Occasionally	Never
Nursing Times .....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
Nursing Standard .....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
Professional Nurse .....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
Other (please specify) .....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3

**In the final few questions, a series of statements are given. You are asked to tick the response which best represents your opinion.**

**These statements relate to research articles in nursing journals.**

*tick one box for each row*

	strongly agree	agree	neither agree or disagree	disagree	strongly disagree
Research is very readable and easy to understand .....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
There are too many journals to keep up to date with .....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Most nursing research is very relevant to my clinical practice .....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
The articles contain a lot of difficult language and jargon .....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
There are too many articles to read on most topics .....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
It is difficult to know what the implications of research for practice are .....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5

29. These statements relate to your views on the environment in which you work.

tick one box for each row

	strongly agree	agree	neither agree or disagree	disagree	strongly disagree
The nurse manager always gives strong support to help staff introducing change in the ward	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
The medical staff are not supportive in working with us to introduce changes in nursing practice	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
I feel I have the authority to make decisions about nursing practice in the ward	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
There is too much bureaucracy and red tape in getting changes in nursing practice agreed	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
The multi-disciplinary team are very co-operative in working with us to introduce changes in nursing practice	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
The other departments in the hospital are very co-operative in working with us to introduce changes in nursing practice	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
In this ward, nursing practice is based on the way it has always been done	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
There is no time to look at and/or implement new ideas	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
I feel constrained by the hierarchy in making changes in practice	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Care is not routinised, but organised in a flexible manner according to patients' individual needs	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Changes in practice are driven by the ward nurses	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
We do not have the resources (staff/equipment) to implement new ideas	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
The staff on this ward are encouraged to reflect on and question practice	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Changes in practice are driven by senior managers	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
In this ward, nursing practice is based on a consideration of research, personal knowledge and experience	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
<b>Grades C, D, E &amp; F only to answer the following question</b>					
The charge nurse is a strong ward leader and motivator	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
<b>Charge Nurses - G &amp; H grade only to answer the following question</b>					
My nurse manager is a strong leader and motivator	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5

## APPENDIX 4

### Questionnaire to Directors of Nursing





## QUESTIONNAIRE - to Directors of Nursing

This questionnaire is part of a nationwide survey of nurses in general medical and surgical wards across Scotland. The project is funded by the Scottish Office Home and Health Department.

The survey has two main aims :

- To determine the extent to which nursing research is being put into practice.
- To identify characteristics that influence the successful implementation and integration of such research findings.

We are sending questionnaires to Directors of Nursing for information about the hospital, and to Charge Nurses and Staff Nurses to gain information about research in practice.

In order for the survey to provide a true representation, we need to hear from everyone we write to. Completing the questionnaire should take about 20 minutes.

*There are no right or wrong answers ; we are interested in your opinions and understanding, and would be very grateful for your help. The information you give will be treated in strictest confidence and your identity coded to maintain anonymity. No one will be able to identify you from the results of the survey.*

We anticipate that the results of the survey will be used to provide the nursing profession with information about the influence of nursing research on practice, and to suggest ways in which research utilisation may be improved.

You will have the opportunity to obtain feedback and further information about the project at a follow up conference in your area (date to be confirmed), when the results will be presented and relevant issues discussed. Please complete the conference slip, and details will be sent to you around June 1996.

In the meantime, if you have any queries please contact :

Penny Bond or Sheila Rodgers      Tel : 031 650 3892  
 Research in Nursing Project  
 Department of Nursing Studies  
 University of Edinburgh  
 40 George Square  
 Edinburgh EH8 9LL

Please return your completed questionnaire and conference slip in the pre-paid envelope within the next fortnight.

**Thank you for your co-operation**

### CONFERENCE SLIP

Please reserve me a place on, and send me details of the "Research Utilisation in Nursing" Conference.

NAME..... DAY TIME TELEPHONE.....

ADDRESS.....

.....



Listed below are brief descriptions of some published research findings that concern Nursing Practice. Please indicate whether or not there is a written policy or procedure in your hospital supporting the use of the findings in nursing practice.

*Tick one box for each statement*

	Hospital policy or procedure exists	Ward/Unit policy or procedure exists	No policy or procedure	Not sure
Any type of antiseptic causes damage to the tissues and is not effective in reducing contamination. In general wards, it is recommended that all wounds are cleansed with povidone iodine or normal saline 0.9%."	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
Wounds, both granulating and sloughy, that are covered with dressings which lead to a moist and occluded environment heal faster than those wounds that are allowed to dry out."	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
Completing a pain assessment chart enables nurses to assess a patient's pain more accurately and so provide more appropriate pain relief."	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
Giving patients information pre-operatively about pain and pain control methods leads to a reduction in pain during the post-operative period."	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
Patients should be fasted for 4 hours in order to ensure an empty stomach prior to anaesthesia. Fasting for more than 6 hours can in itself lead to complications and discomfort."	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
Shaving leads to an increased rate of wound infection post-operatively. It is recommended that patients are not shaved or that hair is removed with clippers or depilatory cream. This leads to lower rates of wound infection post-operatively."	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
Nurses often find it difficult to communicate with dying people and few patients are satisfied with this area of care. Communication with dying patients should be recognised as one of the most important aspects of nursing care."	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
There are several stages that dying patients may experience, for example, denial, anger. A knowledge of these can help the nurse understand a patient's behaviour and feelings."	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
For accurate recordings of oral temperatures using a mercury thermometer, the thermometer must be placed in the sublingual pocket for a minimum of 4 minutes."	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
100% silicone catheters (rather than silicone coated or latex) are recommended for patients whose catheters are to remain in for longer than 6 weeks as they are less likely to block."	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
Maintaining a closed drainage system for urinary catheters is one of the most important steps in the prevention of urinary tract infections in patients with indwelling catheters."	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
The use of deliberate touch by nurses for therapeutic means (for example holding of hands or hugging) has been shown to promote psychological well-being in some patients."	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
In general wards, handwashing should be carried out with liquid soap or antiseptic solution rather than with a bar of soap in order to reduce the risk of cross-infection."	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
For effective patient teaching, information should be given using a planned and structured approach rather than being given opportunistically or in an unplanned way."	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4

1. What is the total number of in-patient beds in your hospital? \_\_\_\_\_ Beds
2. What is the total number of Hospital Procedures?  
as contained in the Nursing Procedure manual \_\_\_\_\_ Procedures
3. What is the total number of Hospital Policies?  
as contained in the Nursing Policy manual \_\_\_\_\_ Policies
4. What is the total number of trained and untrained WTE nurses  
(both day and night) currently employed in the hospital?  
include all trained nurses and nursing auxiliaries \_\_\_\_\_ Nurses
5. How many of this total number are 1st Level registered nurses? \_\_\_\_\_ 1st Level Nurses
6. How many of this total number are trained nurses? \_\_\_\_\_ Trained Nurses

7. Do you employ any nurses on a full-time basis with primary responsibilities for...  
tick one box for each row
- |   | Yes | If Yes, number WTE employed | No | Don't know |
|---|-----|-----------------------------|----|------------|
| ...Quality Assurance? _____               | 1   | _____                       | 2  | 3          |
| ...In-service/Continuing Education? _____ | 1   | _____                       | 2  | 3          |
| ...Nursing Research Activities? _____     | 1   | _____                       | 2  | 3          |

8. Do you employ any nurse who has a designated responsibility in any of the following?  
tick one box for each row
- |                                       | Yes | If Yes, number WTE employed | No | Don't know |
|---------------------------------------|-----|-----------------------------|----|------------|
| Quality Assurance _____               | 1   | _____                       | 2  | 3          |
| In-service/Continuing Education _____ | 1   | _____                       | 2  | 3          |
| Nursing Research Activities _____     | 1   | _____                       | 2  | 3          |

9. In the last 12 months, have any nurses from your hospital been given time to carry out research?  
tick one box
- |  |   |                  |   |
|--|---|------------------|---|
| Yes, full-time doing research _____                    | 1 | No _____         | 4 |
| Yes, part-time doing research _____                    | 2 | Don't know _____ | 5 |
| Yes, both full-time and part-time doing research _____ | 3 |                  |   |

10. Are there committees in your hospital specifically for research?  
tick one box
- |                  |   |
|------------------|---|
| Yes _____        | 1 |
| No _____         | 2 |
| Don't know _____ | 3 |

11. If Yes, at what level are these committees?  
tick all that apply
- |                                  |   |
|----------------------------------|---|
| Unit/Trust Management _____      | 1 |
| Nursing Research Committee _____ | 2 |
| Other (please specify) _____     | 3 |

Has any nursing research been conducted in your hospital in the last 12 months?

tick one box

Yes _____	1
No _____	2
Don't know _____	3

If Yes, what type of research?

tick all that apply

Research directed by nurses _____	<input type="checkbox"/>
Research directed by medical staff _____	<input type="checkbox"/>
Research directed by others _____ (please specify who)	<input type="checkbox"/>

Have any nurses in your hospital been involved in doing research in the last 12 months?

tick one box

Yes _____	1
No _____	2
Don't know _____	3

If Yes, what type of research?

tick all that apply

In research directed by nurses _____	<input type="checkbox"/>
In research directed by medical staff _____	<input type="checkbox"/>
In research directed by others _____ (please specify who)	<input type="checkbox"/>

Please specify any policy statements or organisational aims that include nursing research.

If there are none, or you don't know, please write in "None" or "Don't know"

Please specify any incentives your hospital provides for nurses to do research.

Examples of incentives might be promotions dependent on research skills, providing release time to do research and paying expenses for a nurse to present research at a conference.

If none, or you don't know, write in "None" or "Don't know"

Is study leave available to your trained nurses at the moment?

tick one box

Yes _____	1
No _____	2
Don't know _____	3

If Yes, what kind of study leave is available to them?

tick all that apply

Paid leave _____	<input type="checkbox"/>	Fees or leave but not both _____	<input type="checkbox"/>
Unpaid leave _____	<input type="checkbox"/>	Travel paid _____	<input type="checkbox"/>
Fees paid _____	<input type="checkbox"/>	Don't know _____	<input type="checkbox"/>

Do your trained nurses have access to a library with relevant nursing texts and journals?

tick one box

Yes, within hospital _____	1
Yes, off site _____	2
No _____	3
Don't know _____	4

Are summaries or titles of recently published research articles circulated to the wards?

tick one box

Yes _____	1
No _____	2
Don't know _____	3

## APPENDIX 5

### Study information sheet for distribution in the hospitals

#### Research Utilisation in Nursing Project

We are conducting a study into the extent of, and factors influencing research utilisation by nurses in general medical and general surgical wards throughout Scotland. Your hospital has been selected in a 50% random sample of all hospitals in Scotland with general medical and surgical wards. Within the next few weeks, we plan to send questionnaires to at least 5 nurses from each ward, including the Sister or Charge Nurse. Following analysis of the questionnaires, interviews will take place with a small sample of nurses to identify strongly and directly influencing factors.

The questionnaires are seeking information on individual nurses opinions and understanding, and in order for the study to provide a true representation of what is happening in nursing in Scotland, we hope to hear from every one we send questionnaires to. The information we receive will be treated in strictest confidence, and all responses coded to maintain anonymity. If you receive a questionnaire we would be grateful for your involvement in our study.

We anticipate that the results of the survey will be used to provide the nursing profession with information on the extent to which nursing research is currently being put into practice, and to suggest strategies that may enable further developments in research based practice by nurses.



## APPENDIX 6

### Descriptive Statistics on Hospital Data from Director of Nursing's Questionnaire.

#### Descriptive statistics on the hospital and nurses employed

Variable	n	Categories	Distribution (no. and %)
Hospital size	25	Small Medium Large	12 (48%) 6 (24%) 7 (28%)
Hospital location	25	Rural Suburban Urban	12 (48%) 12 (48%) 1 ( 4%)
Hospital type	25	Teaching None teaching	8 (32%) 17 (68%)
Full-time quality assurance nurses	18	Yes No	14 (77%) 4 (22%)
Full-time continuing education nurses	15	Yes No	10 (66.7%) 5 (33.3%)
Full-time nursing research nurses	14	Yes No	3 (21.4%) 11 (78.6%)
Nurses with designated responsibility for quality assurance	16	Yes No	9 (56.2%) 7 (43.8%)
Nurses with designated responsibility for continuing education	16	Yes No	9 (56.2%) 7 (43.8%)
Nurses with designated responsibility for nursing research	14	Yes No	4 (28.6%) 10 (71.4%)
Time given to nurses to do research?	20	Full-time Part-time FT & PT None Don't know	1 ( 5%) 7 (35%) 1 ( 5%) 9 (45%) 2 (10%)
Research committees?	20	Yes No Don't know	7 (35%) 12 (60%) 1 (5%)
Type of research committee		Unit/Trust Nursing research committee	4 3
Research (nursing) done in past 12 months	19	Yes No Don't know	12 (63.2%) 5 (26.3%) 2 (10.5%)



Type of research carried out in past 12 months	15	Research directed by nurses Research directed by medical staff Research directed by others	12 (80%) 3 (20%) 0
Involvement of nurses in research	19	Yes No Don't know	14 (73.7%) 3 (15.8%) 2 (10.5%)
Type of research nurses involved in	18	Research directed by nurses Research directed by medical staff Research directed by others	11 (61%) 6 (33%) 1 (6%)
Availability of study leave	20	Yes No Don't know	18 (90%) 1 (5%) 1 (5%)
Type of study leave	20	Paid leave Un paid leave Fees paid Fees or leave paid Travel paid	17 (85%) 8 (40%) 17 (85%) 6 (30%) 11 (55%)
Library access	20	Yes within hospital Yes offsite	13 (65%) 7 (35%)
Circulation of research summaries	20	Yes No Don't know	10 (50%) 9 (45%) 1 (5%)

### Descriptive statistics on the existence of hospital or ward policies/procedures

Practice no.	n	Hospital or ward policy/procedure	None/not sure
1	17	76.5% (13)	23.5% (4)
2	17	64.7% (11)	35.35 (6)
3	18	77.8% (14)	22.2% (4)
4	17	82.4% (14)	17.6% (3)
5	18	51.1% (11)	48.9% (7)
6	16	56.3% (9)	43.7% (7)
7	18	66.7% (12)	33.6% (6)
8	18	44.4% (8)	55.6% (10)
9	17	53% (9)	47% (8)
10	17	82.3% (14)	17.7% (3)
11	17	88.2% (15)	11.8% (2)
12	17	23.5% (4)	76.5% (13)
13	18	88.9% (16)	11.1% (2)
14	18	72.2% (13)	27.8% (5)



## APPENDIX 7

### Study leave and time spent studying and reading

Number of study days in past 12 months (n=652)

	n	%	Cumulative n	Cumulative %
<b>None</b>	75	12	75	12
<b>0.1 - 2</b>	203	31	278	43
<b>2.1 - 4</b>	122	19	400	62
<b>4.1 - 10</b>	159	24	559	86
<b>10.1 - 30</b>	73	11	632	97
<b>30.1 - 100</b>	20	3	652	100

Number of study days funded in past 12 months (n=630)

	n	%	Cumulative n	Cumulative %
<b>None</b>	136	21	136	21
<b>0.1 - 2</b>	189	30	325	51
<b>2.1 - 4</b>	99	16	424	67
<b>4.1 - 10</b>	131	21	555	88
<b>10.1 - 30</b>	58	9	613	97
<b>30.1 - 100</b>	17	3	630	100

Time spent studying and reading on duty each month (n=503 )

	n	%	Cumulative n	Cumulative %
<b>None</b>	167	33	167	33
<b>0.1 - 2</b>	159	32	326	65
<b>2.1 - 4</b>	77	15	403	80
<b>4.1 - 10</b>	82	16	485	96
<b>10.1 - 30</b>	16	3	501	99
<b>30.1 - 60</b>	2	<1	503	100

Time spent studying and reading off duty each month (n=580 )

	n	%	Cumulative n	Cumulative %
<b>None</b>	19	3	19	3
<b>0.1 - 2</b>	117	20	136	23
<b>2.1 - 4</b>	136	23	272	46
<b>4.1 - 10</b>	210	36	482	82
<b>10.1 - 30</b>	84	15	566	97
<b>30.1 - 100</b>	14	3	580	100



## APPENDIX 8

### Descriptive statistics of nurses

#### Distribution of numbers of nurses by category

Variable	n	Categories	Distribution
Hospital size	680	Small	158 (23.2%)
		Medium	210 (30.9%)
		Large	312 (45.9%)
Hospital location	680	Rural	149 (21.9%)
		Suburban	414 (60.9%)
		Urban	117 (17.2%)
Hospital type	680	Teaching	349 (51.4%)
		None teaching	331 (48.6%)
Whether ward a speciality	615	Yes	400 (65%)
		No	215 (35%)
Ward type (5 categories)	673	Surgical	265 (39.4%)
		Predominantly surgical	37 (5.5%)
		Medical	317 (47.1%)
		Predominantly medical	42 (6.2%)
		Mixed	12 ( 1.9%)
Ward type (3 categories)	673	Surgical	302 (44.8%)
		Medical	359 (53.3%)
		Mixed	12 ( 1.9%)
Whether ward a training area	674	Yes	621 (92.1%)
		No	51 (7.6%)
		Don't know	2 (0.3%)
Age group	678	21-25	144 (21.3%)
		26-30	195 (28.8%)
		31-35	137 (20.2%)
		36-40	72 (10.6%)
		41-45	52 (7.7%)
		46-50	40 (5.9%)
		51-65	38 (5.6%)



Gender	680	Male	43 ( 6.4%)
		Female	637 (93.6%)
Highest qualification	679	2nd level registration	71 (10.5%)
		1st level registration	608 (89.5%)
Highest qualification	679	2nd level registration	71 (10.5%)
		1st level registration	434 (63.9%)
		Professional Studies	137 (20.2%)
		Degree	37 (5.4%)
Highest qualification	679	2nd level registration	71 (10.5%)
		1st level registration	434 (63.9%)
		Professional Studies I	91 (13.4%)
		Professional Studies II	46 ( 6.8%)
		Degree	37 ( 5.4%)
Length of time qualified	677	<6 months	7 ( 1.0%)
		6months - 1yr	31 ( 4.6% )
		>1yr but <2yrs	60 ( 8.9%)
		>2yrs but <5yrs	148 (21.9%)
		>5yrs but <10 yrs	167 (24.7%)
		>10 yrs but < 15 yrs	103 (15.2%)
		>15 yrs but < 20 yrs	61 ( 9%)
		>20 yrs	100 (14.7%)
Job title (3 categories)	680	Staff Nurse	471 (69.3%)
		Enrolled Nurse	72 (10.6%)
		Charge Nurse + others	137 (20.1%)
Job title (5 categories)	680	Staff Nurse	471 (69.3%)
		Enrolled Nurse	72 (10.6%)
		Charge Nurse	119 (17.5%)
		Clinical Nurse Specialist	3 ( 0.4%)
		Senior Nurse	5 ( 0.7%)
		Other	10 ( 1.5%)

Clinical grade	680	C D E F G H I	39 (5.7%) 223 (32.8%) 271 (39.9%) 31 (4.6%) 112 (16.5%) 4 (.6%) 0
Length of time on current ward	680	<6 months 6months - 1yr >1yr but <2yrs >2yrs but <5yrs >5yrs but <10 yrs >10 yrs	61 (9.1%) 96 (14.1%) 135 (19.8%) 224 (32.9%) 101 (14.9%) 63 (9.2%)
Job satisfaction	674	1 2 3 4 5 6	21 (3.1%) 65 (9.6%) 155 (23%) 247 (36.7%) 165 (24.5%) 21 (3.1%)
Availability of study leave	676	Yes No Don't know	373 (55.2%) 250 (37.0%) 53 (7.8%)
Paid leave	370	Yes No	275 (74.1%) 95 (25.7%)
Unpaid leave	370	Yes No	49 (13.2%) 321 (86.8%)
Fees paid	370	Yes No	134 (36.2%) 236 (63.8%)
Travel paid	370	Yes No	60 (16.2%) 310 (83.8%)
Fees or leave paid	370	Yes No	60 (16.2%) 310 (83.8%)

Don't know type of leave available	370	Yes No	19 ( 5.1%) 351 (94.9%)
Type of study days attended	655	Part of course Private study day Conference Hospital in-service Local study day Others	133 (20.3%) 106 (16.1%) 175 (26.7%) 439 (67.0%) 340 (51.9%) 45 (6.9%)
Whether studied nursing research	665	Yes No Don't know	274 (41.2%) 385 (57.9%) 6 (0.9%)
Means of studying nursing research	250	Part of course Part of study day Conference Personal study	184 (67.7%) 221 (81.2%) 18 (6.6%) 86 (31.6%)
Information on research utilisation	250	Yes No Don't know	75 (30.0%) 98 (39.2%) 77 (30.8%)
Topic taught based on nursing research	568	Yes No Don't know	211 (37.1%) 197 (34.7%) 160 (28.2%)
Library access (4 categories)	663	Yes onsite Yes offsite No Don't know	369 (55.7%) 243 (36.7%) 46 ( 6.9%) 5 ( 0.7%)
Library access (3 categories)	663	Yes No Don't know	612 (92.4%) 46 ( 6.9%) 5 ( 0.7%)
Circulation of research summaries	652	Yes No Don't know	234 (35.8%) 383 (58.7%) 35 ( 5.5%)
Whether ward gets journals	662	Yes No Don't know	265 (40.0%) 384 (58.0%) 13 ( 2.0%)

Read ward journals	277	Yes No	241 (87%) 36 (13%)
Journals read	473	Regularly read at least one Occasionally read at least one Never	401 (60.2%) 263 (39.5%) 2 (0.3%)
	324	Regularly > one Occasionally > one	120 (37.0%) 204 (63.0%)
Read Nursing Times	584	Regularly Occasionally Never	223 (38.2%) 351 (60.1%) 10 (1.7%)
Read Nursing Standard	502	Regularly Occasionally Never	162 (32.3%) 301(60.0%) 39 (7.7%)
Read Professional Nurse	419	Regularly Occasionally Never	105 (25.1%) 233 (55.6%) 81 (19.3%)
Read 'other' journal	137	Regularly Occasionally Never	55 (40.2%) 48 (35.0%) 34 (24.8%)

### Nurses' views on the existence of a ward policy/procedure for a practice

Practice no.	Total	Yes (% of total)	No (% of total)	Don't know (% of total)
1	561	27.98	43.26	27.98
2	427	29.27	44.02	26.00
3	564	16.84	58.51	25.18
4	525	22.66	40.38	36.95
5	382	12.30	53.40	34.29
6	409	10.76	48.66	40.59
7	635	15.43	50.40	34.18
8	634	13.56	46.85	39.59
9	254	14.96	52.36	32.68
10	485	24.54	41.44	34.02
11	641	34.17	44.15	21.68
12	563	3.91	60.75	35.35
13	612	27.29	56.05	16.67
14	486	23.87	44.65	31.48

### Nurses views on the existence of a hospital policy/procedure for a practice

Practice no.	Total	Yes (% of total)	No (% of total)	Don't know (% of total)
1	571	30.30	40.46	27.50
2	427	26.00	48.00	26.00
3	564	14.72	60.11	25.18
4	525	16.95	46.00	36.95
5	382	15.71	50.00	34.29
6	409	9.05	50.37	40.83
7	635	12.28	53.39	34.33
8	634	10.41	50.00	39.59
9	254	19.69	47.64	32.68
10	485	22.89	43.09	34.02
11	641	42.28	35.88	21.84
12	563	3.20	62.17	35.35
13	612	62.59	20.75	16.67
14	486	20.99	47.53	31.48

## Tables showing distribution of sources of information for each practice

### Practice no. 1

Source of information	Total no. aware of practice	No. aware through this source	%
Reading	570	306	53.68%
Study day	570	68	11.93%
In training	570	232	40.70%
Other source	570	120	21.05%
Not sure where heard of	570	52	9.12%

### Practice no. 2

Source of information	Total no. aware of practice	No. aware through this source	%
Reading	429	286	66.67%
Study day	429	134	31.24%
In training	429	136	31.70%
Other source	429	96	22.34%
Not sure where heard of	429	17	3.96%

### Practice no. 3

Source of information	Total no. aware of practice	No. aware through this source	%
Reading	566	292	51.59%
Study day	566	133	23.50%
In training	566	251	44.35%
Other source	566	197	34.81%
Not sure where heard of	566	13	2.30%

### Practice no.4

Source of information	Total no. aware of practice	No. aware through this source	%
Reading	532	391	73.50%
Study day	532	78	14.66%
In training	532	289	54.32%
Other source	532	72	13.53%
Not sure where heard of	532	17	3.19%



## Practice no. 5

<b>Source of information</b>	<b>Total no. aware of practice</b>	<b>No. aware through this source</b>	<b>%</b>
Reading	384	256	66.67%
Study day	384	25	6.51%
In training	384	149	38.80%
Other source	384	91	23.70%
Not sure where heard of	384	78	20.31%

## Practice no. 6

<b>Source of information</b>	<b>Total no. aware of practice</b>	<b>No. aware through this source</b>	<b>%</b>
Reading	413	279	67.55%
Study day	413	20	4.84%
In training	413	178	43.10%
Other source	413	63	15.25%
Not sure where heard of	413	39	9.44%

## Practice no.7

<b>Source of information</b>	<b>Total no. aware of practice</b>	<b>No. aware through this source</b>	<b>%</b>
Reading	640	444	69.37%
Study day	640	239	37.34%
In training	640	397	62.03%
Other source	640	146	22.81%
Not sure where heard of	640	19	2.97%

## Practice no. 8

<b>Source of information</b>	<b>Total no. aware of practice</b>	<b>No. aware through this source</b>	<b>%</b>
Reading	651	456	70.04%
Study day	651	248	38.09%
In training	651	442	67.89%
Other source	651	117	17.97%
Not sure where heard of	651	6	0.92%

Practice no. 9

<b>Source of information</b>	<b>Total no. aware of practice</b>	<b>No. aware through this source</b>	<b>%</b>
Reading	260	129	49.62%
Study day	260	11	4.23%
In training	260	157	60.38%
Other source	260	24	9.23%
Not sure where heard of	260	13	5.00%

Practice no. 10

<b>Source of information</b>	<b>Total no. aware of practice</b>	<b>No. aware through this source</b>	<b>%</b>
Reading	489	306	62.58%
Study day	489	62	12.68%
In training	489	228	46.63%
Other source	489	124	25.36%
Not sure where heard of	489	32	6.54%

Practice no. 11

<b>Source of information</b>	<b>Total no. aware of practice</b>	<b>No. aware through this source</b>	<b>%</b>
Reading	642	479	74.61%
Study day	642	113	17.60%
In training	642	456	71.03%
Other source	642	118	18.38%
Not sure where heard of	642	8	1.25%

Practice no.12

<b>Source of information</b>	<b>Total no. aware of practice</b>	<b>No. aware through this source</b>	<b>%</b>
Reading	571	386	67.60%
Study day	571	139	24.34%
In training	571	340	59.54%
Other source	571	100	17.51%
Not sure where heard of	571	24	4.20%

Practice no. 13

<b>Source of information</b>	<b>Total no. aware of practice</b>	<b>No. aware through this source</b>	<b>%</b>
Reading	615	402	65.37%
Study day	615	116	18.86%
In training	615	358	58.21%
Other source	615	183	29.76%
Not sure where heard of	615	35	5.69%

Practice no. 14

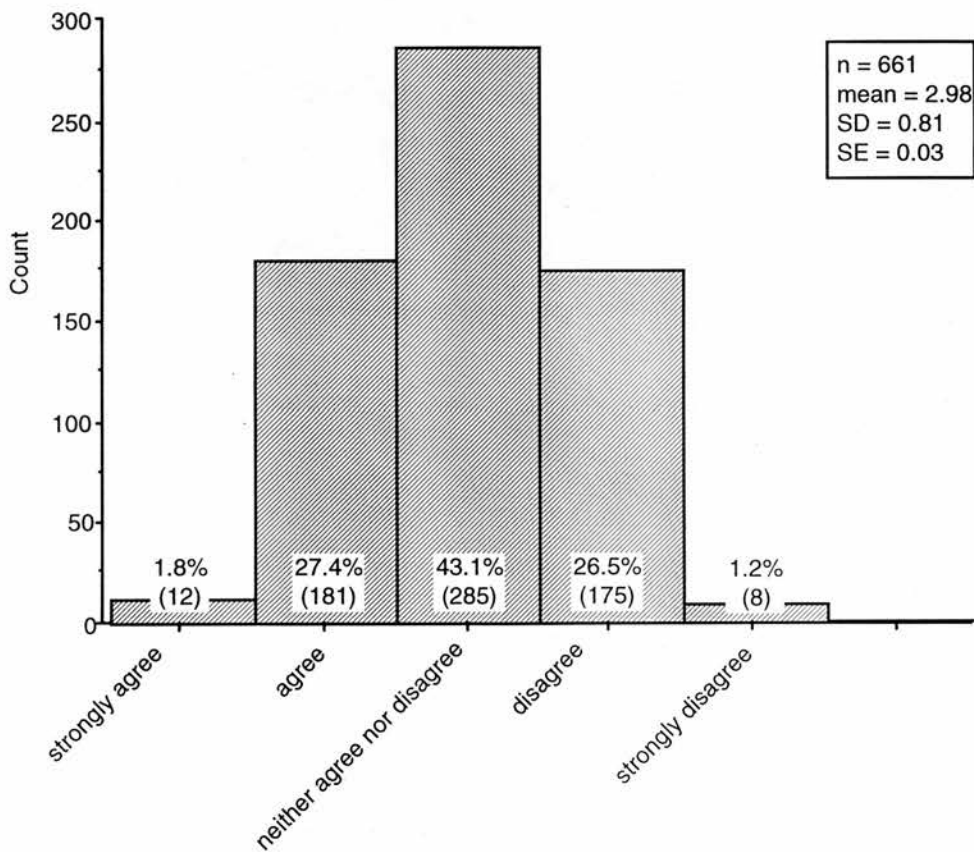
<b>Source of information</b>	<b>Total no. aware of practice</b>	<b>No. aware through this source</b>	<b>%</b>
Reading	490	308	62.85%
Study day	490	122	24.90%
In training	490	253	51.63%
Other source	490	71	14.49%
Not sure where heard of	490	25	5.10%

## APPENDIX 9

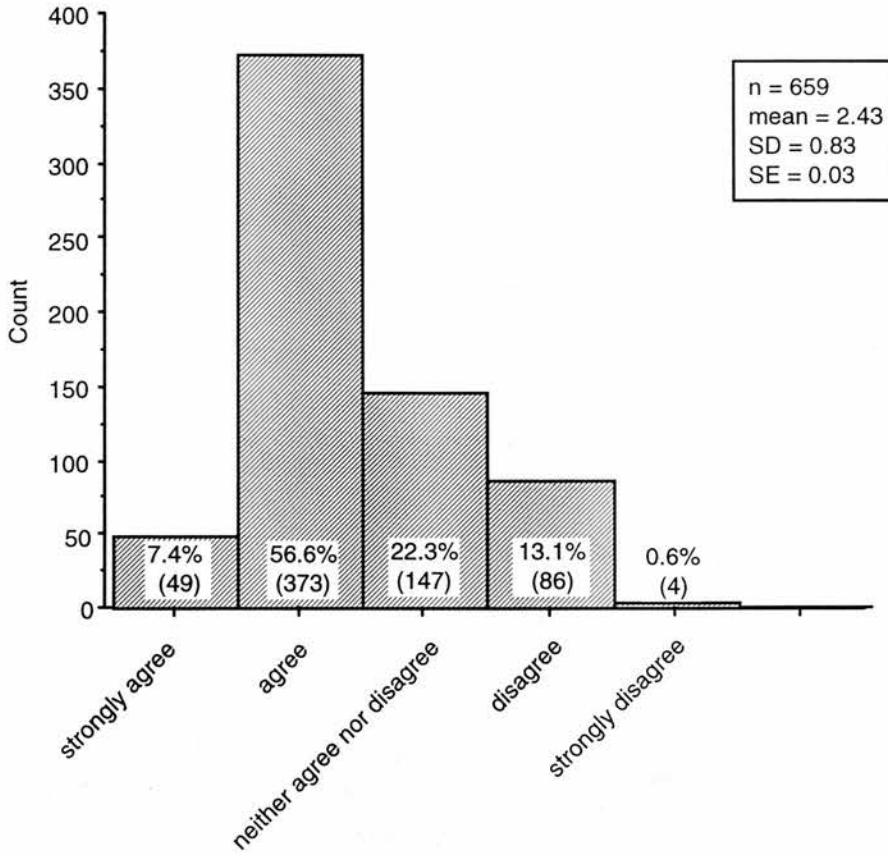
### Views on research articles in nursing journals and on the working environment

Graphs of responses to questions 28a to 29p. (A score of 1= strongly agree, 5= strongly disagree)

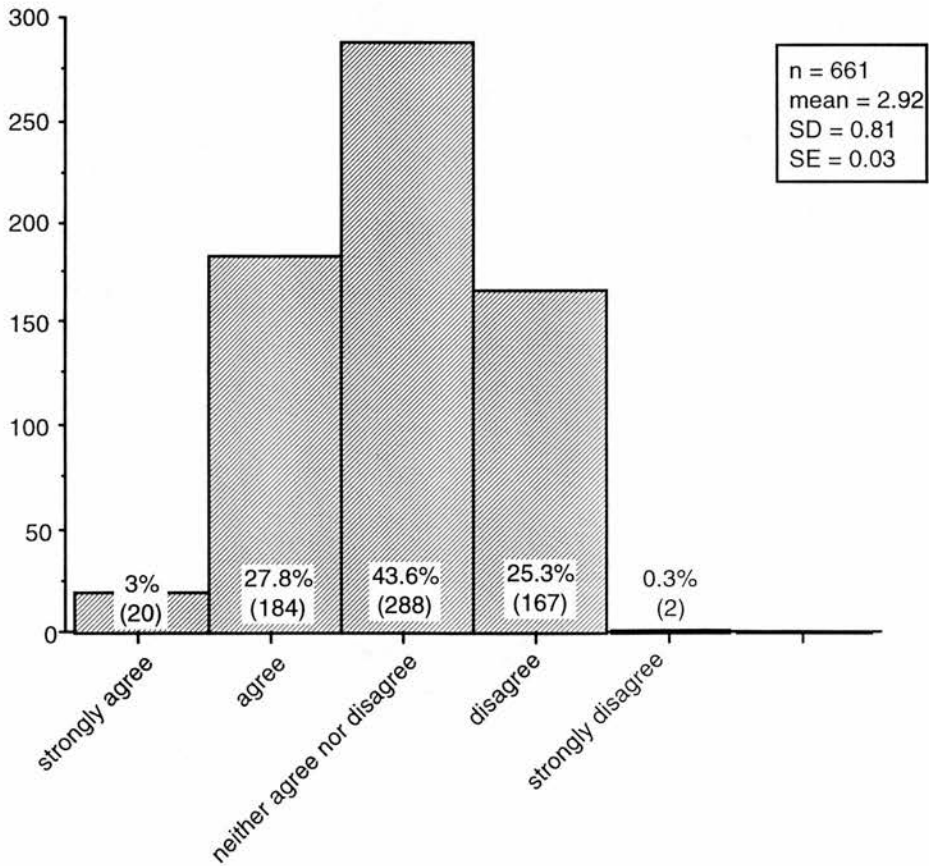
28a Research is very readable and easy to understand



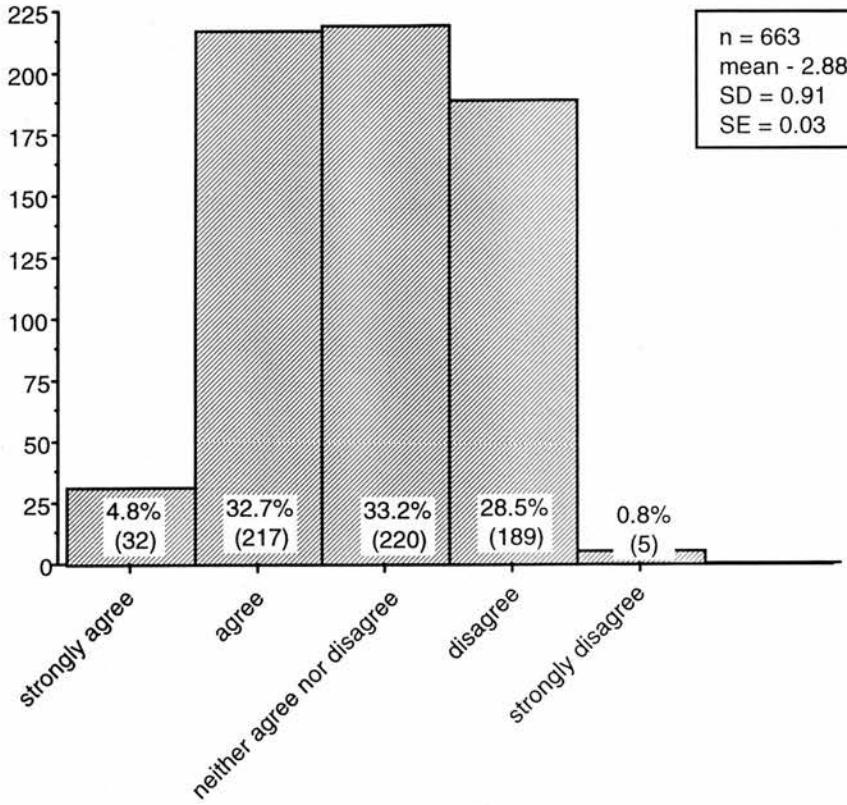
**28b There are too many journals to keep up to date with**



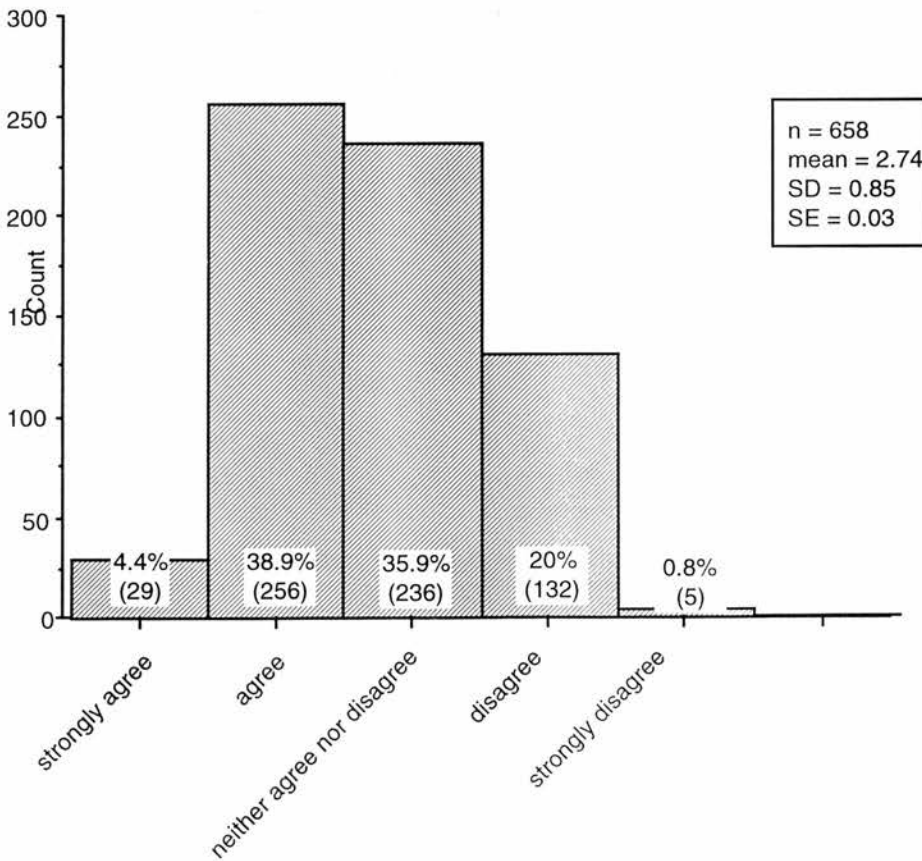
**28c Most nursing research is very relevant to my clinical practice**



**28d The articles contain a lot of difficult language and jargon**

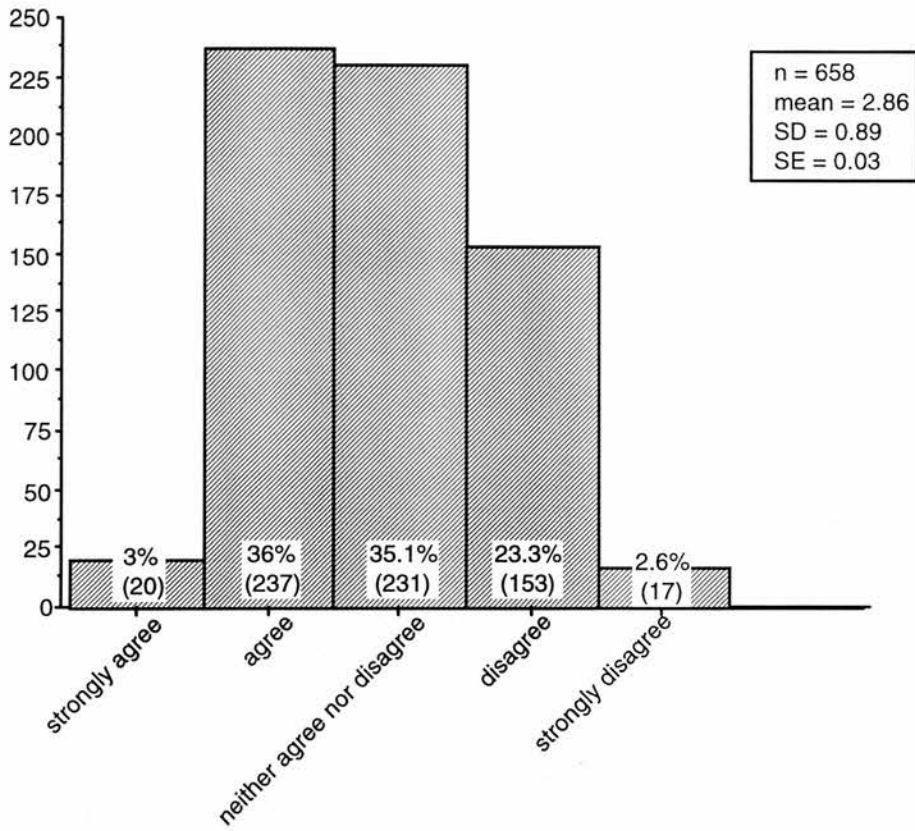


**28e There are too many articles to read on most topics**

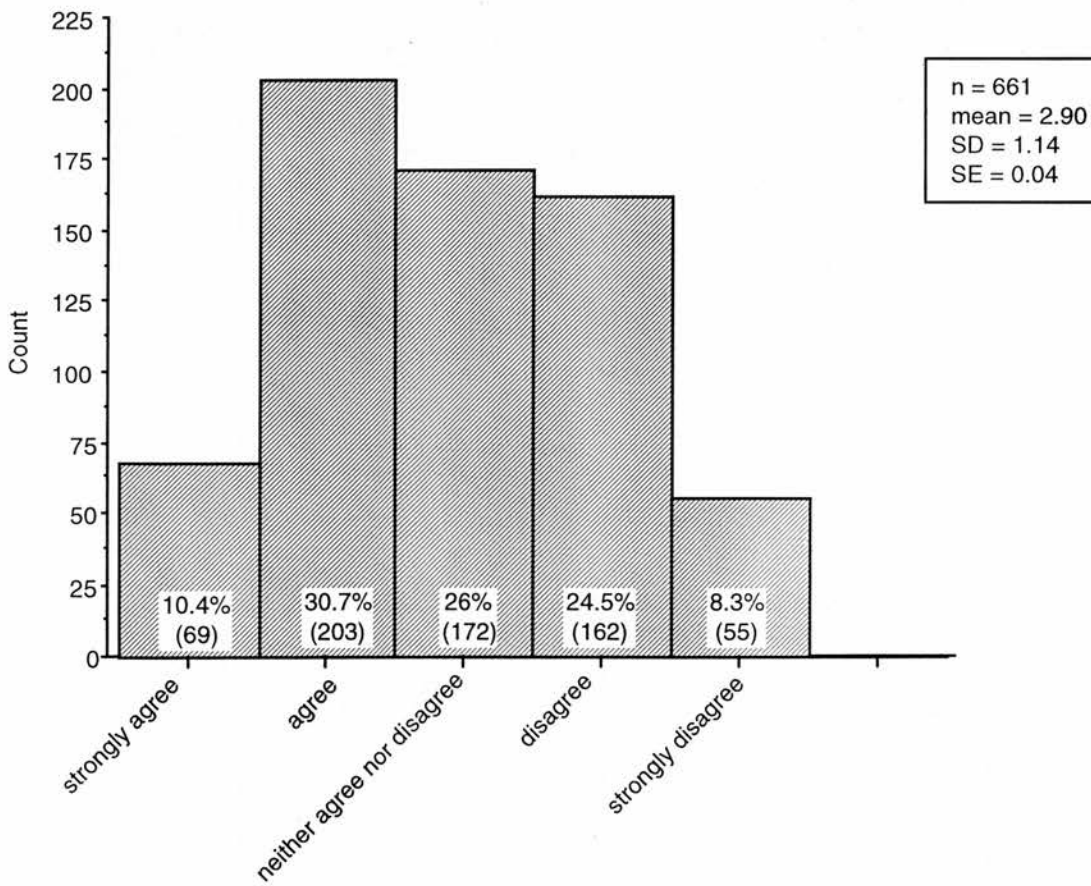




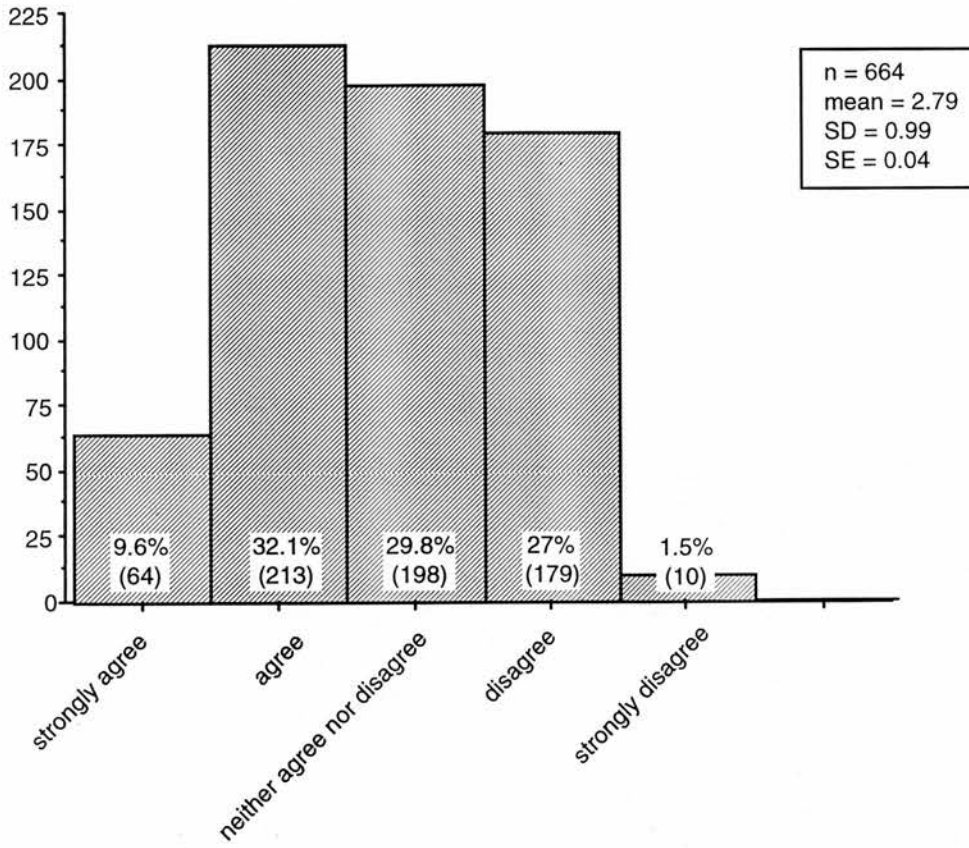
28f It is difficult to know what the implications for practice are



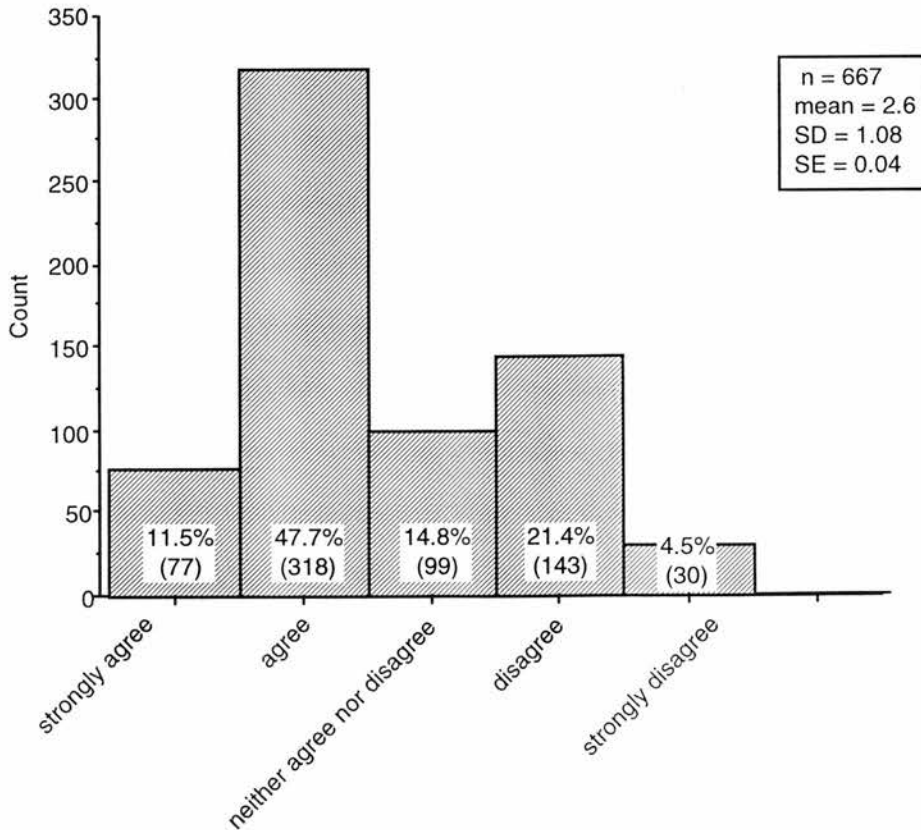
29a The nurse manager always gives strong support to help staff introducing change in the ward



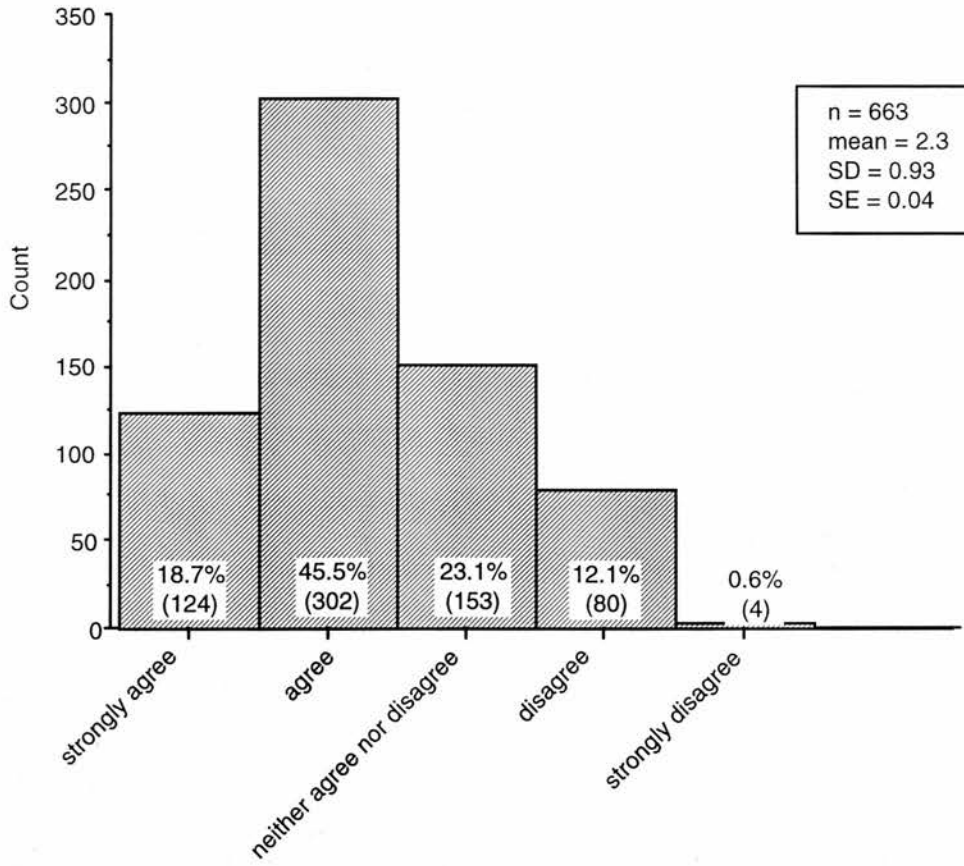
29b The medical staff are not supportive in working with us to introduce changes in nursing practice



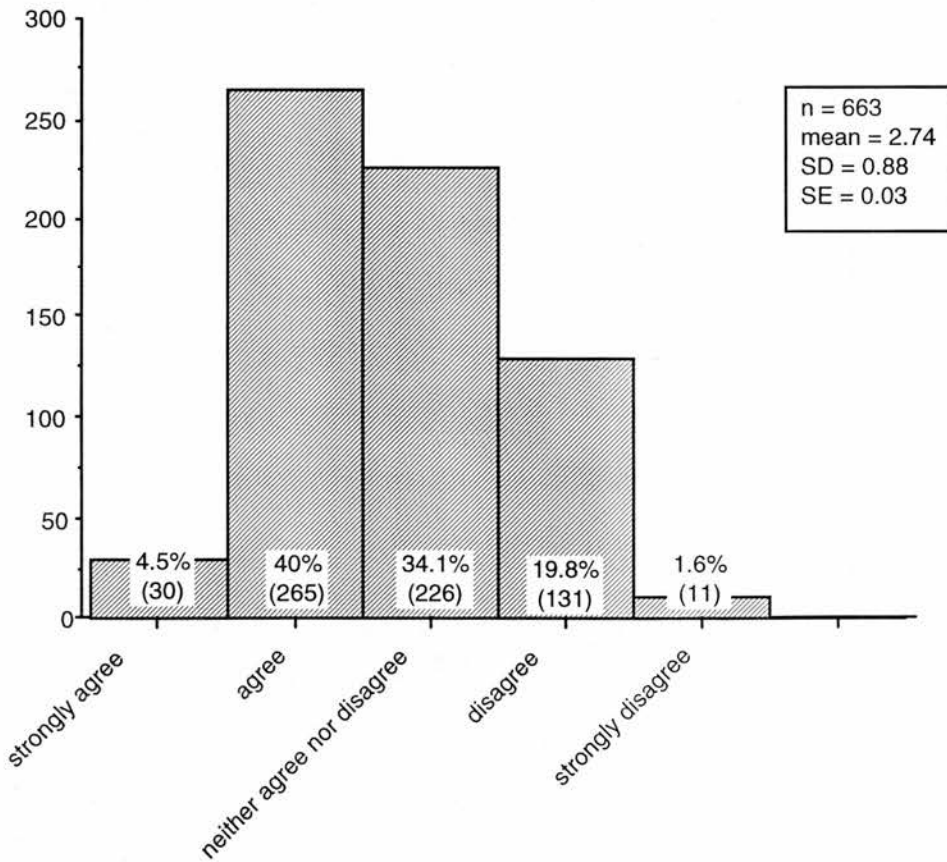
29c I feel I have the authority to make decisions about nursing practice in the ward



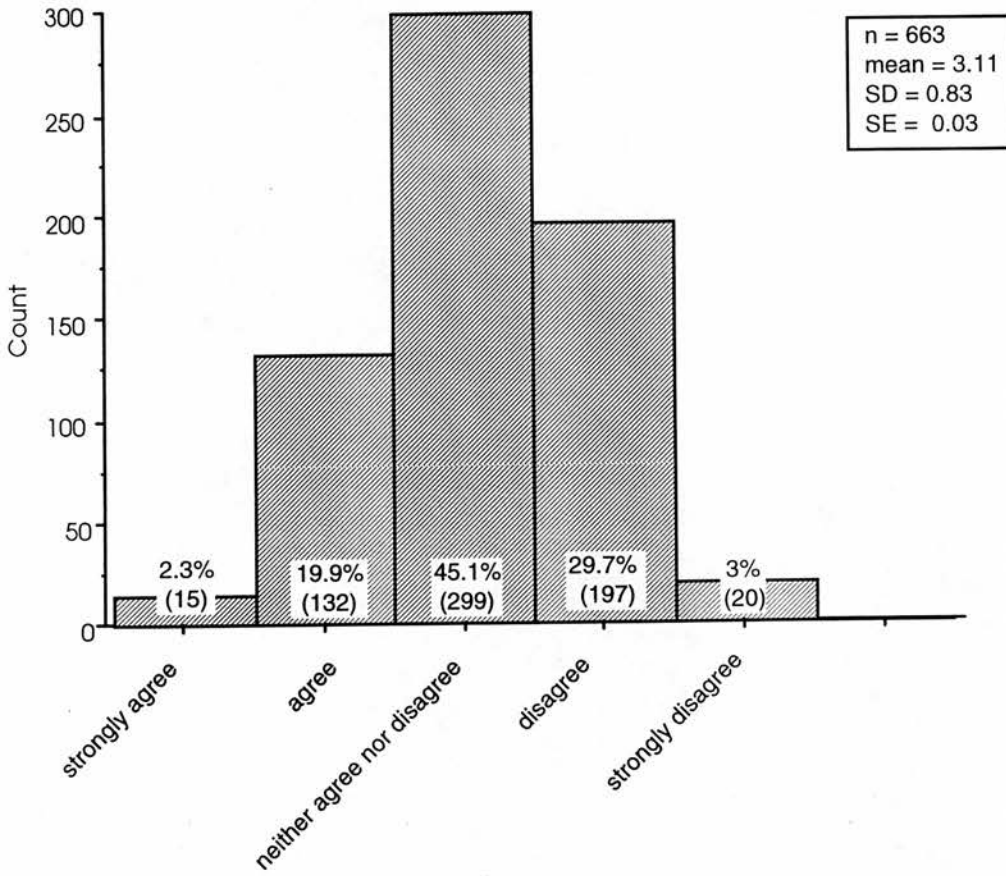
29d There is too much bureaurcra<sup>c</sup>y and red tape in getting change in nursing practice agreed



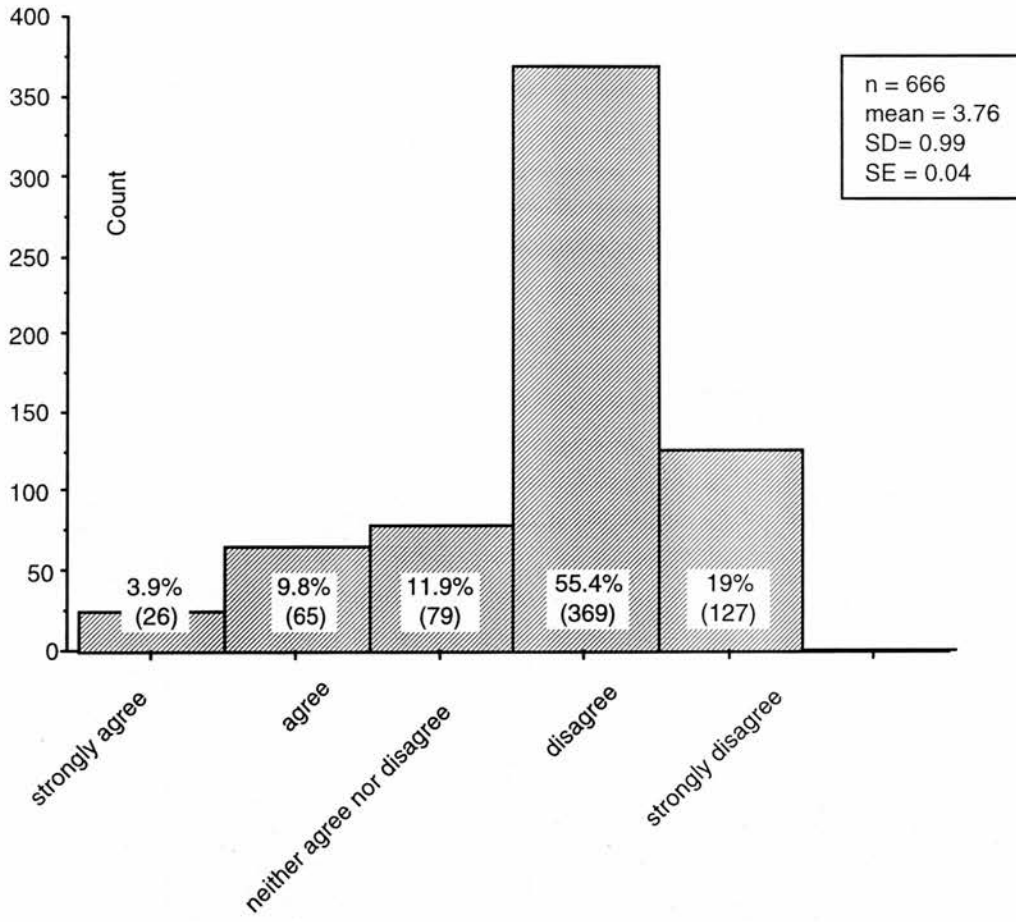
29e The multi-disciplinary team are very co-operative in working with us to introduce changes in nursing practice



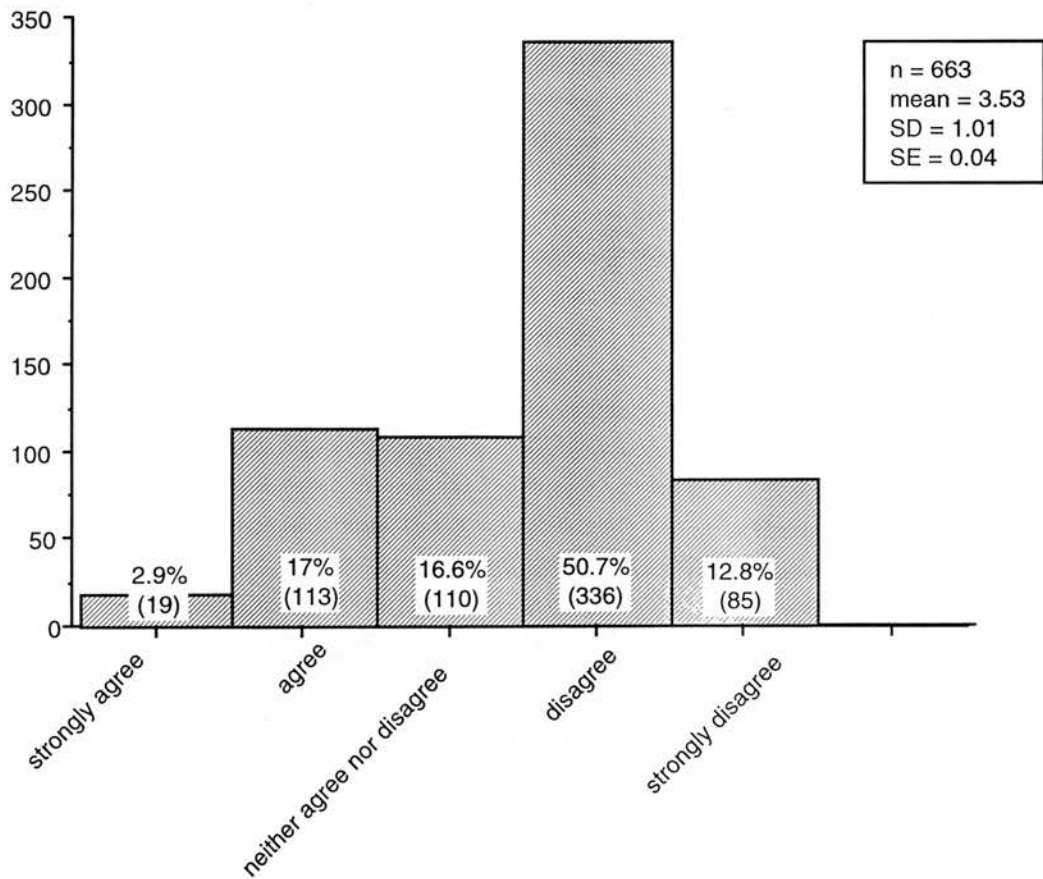
**29f The other departments in the hospital are very co-operative in working with us to introduce changes in nursing practice**



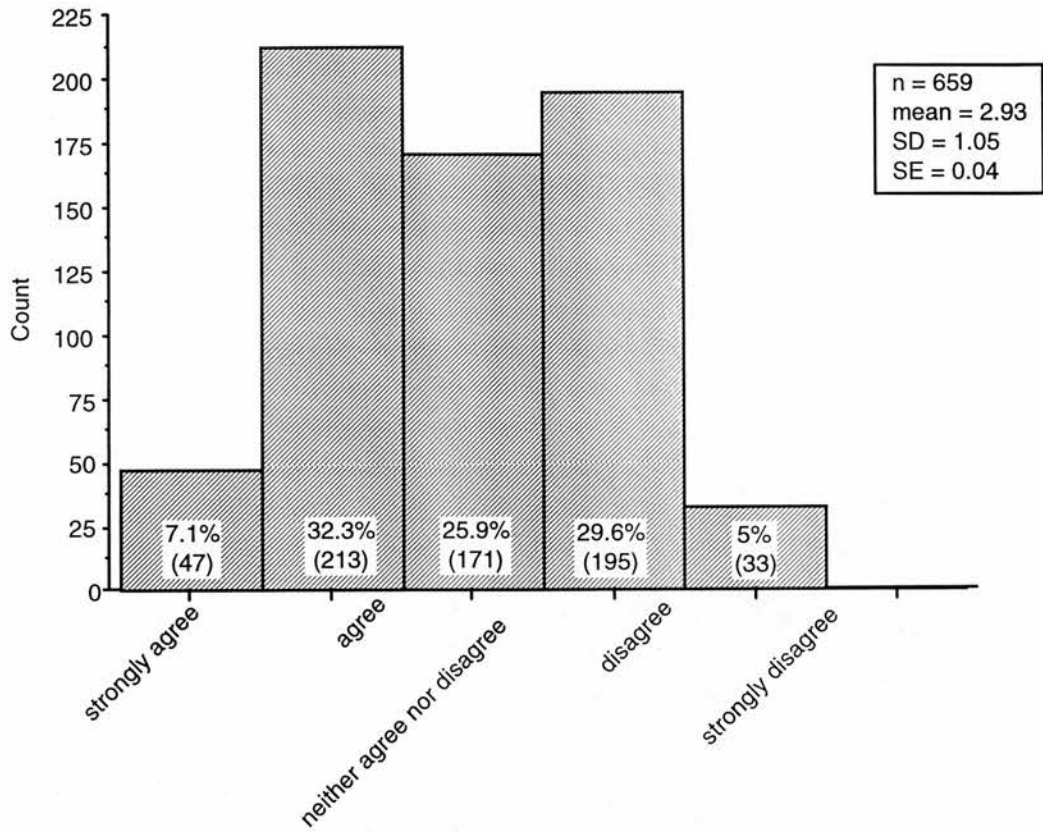
29g In this ward, nursing practice is based on the way it has always been done



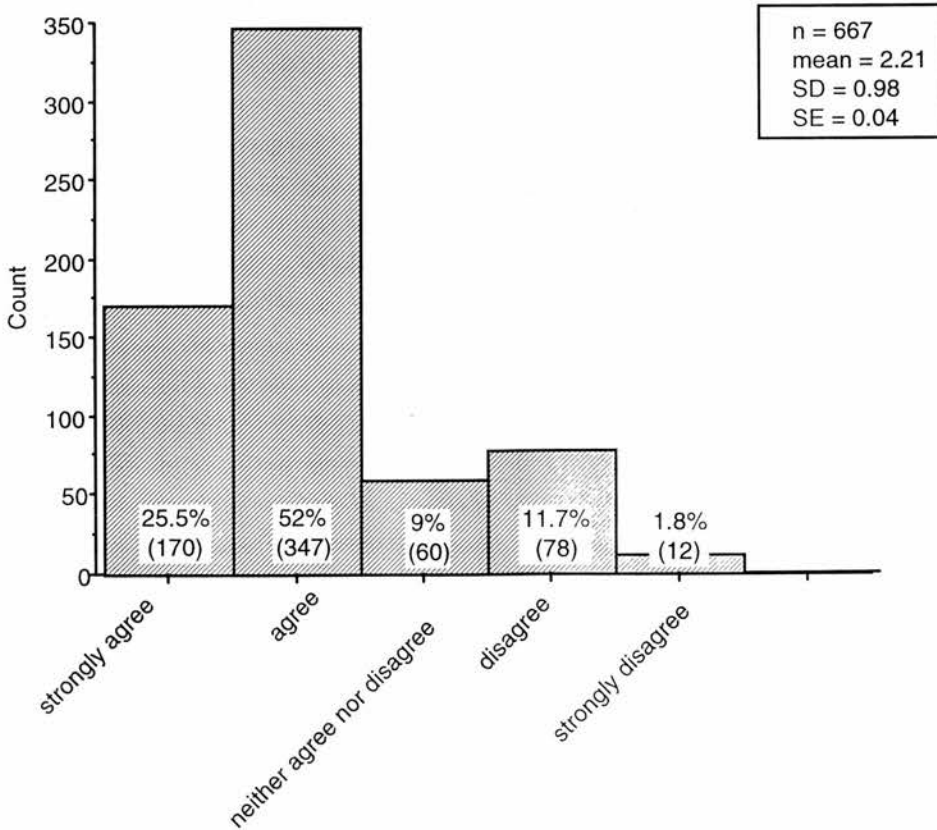
29h There is no time to look at and/or implement new ideas



**29i I feel constrained by the hierachy in making changes in practice**

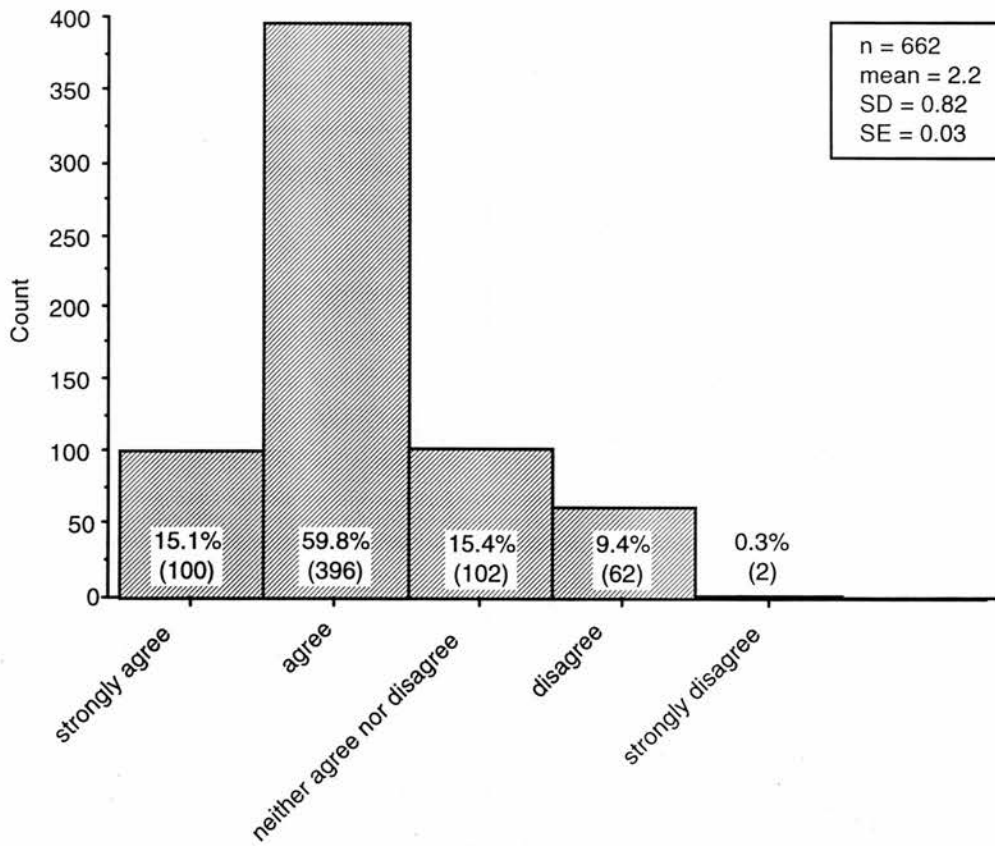


**29j Care is not routinised, but organised in a flexible manner according to patient's individual needs**

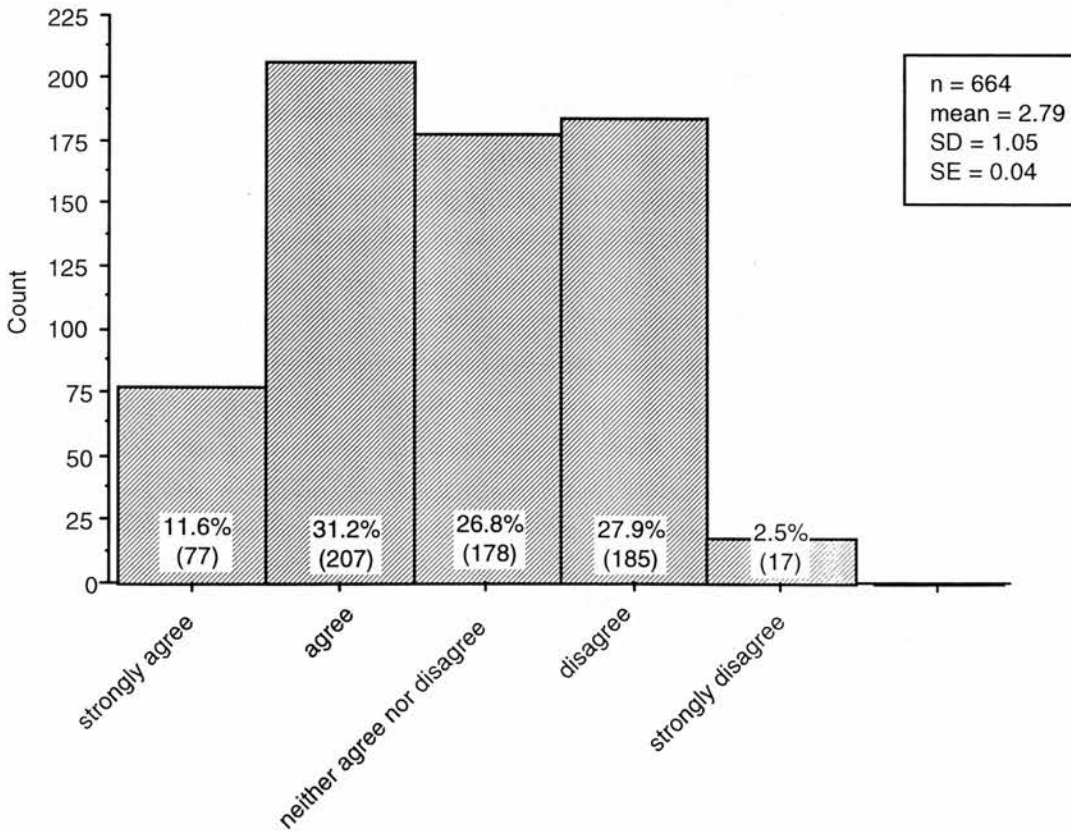




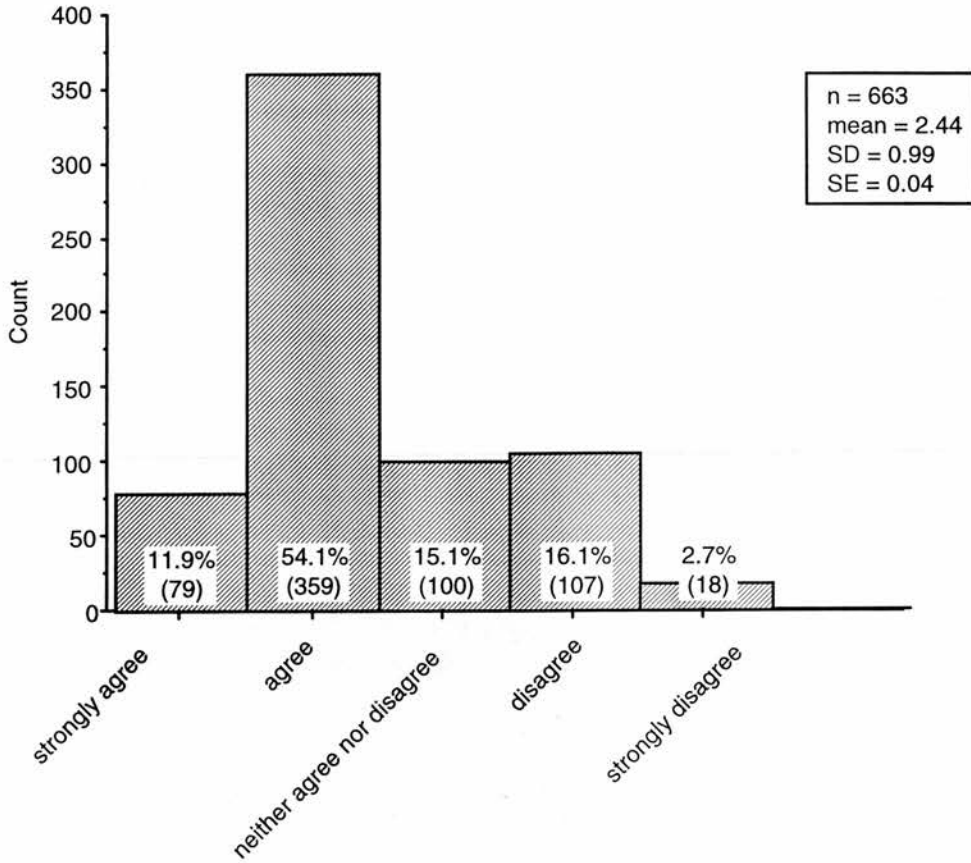
**29k Changes in practice are driven by the ward nurses**



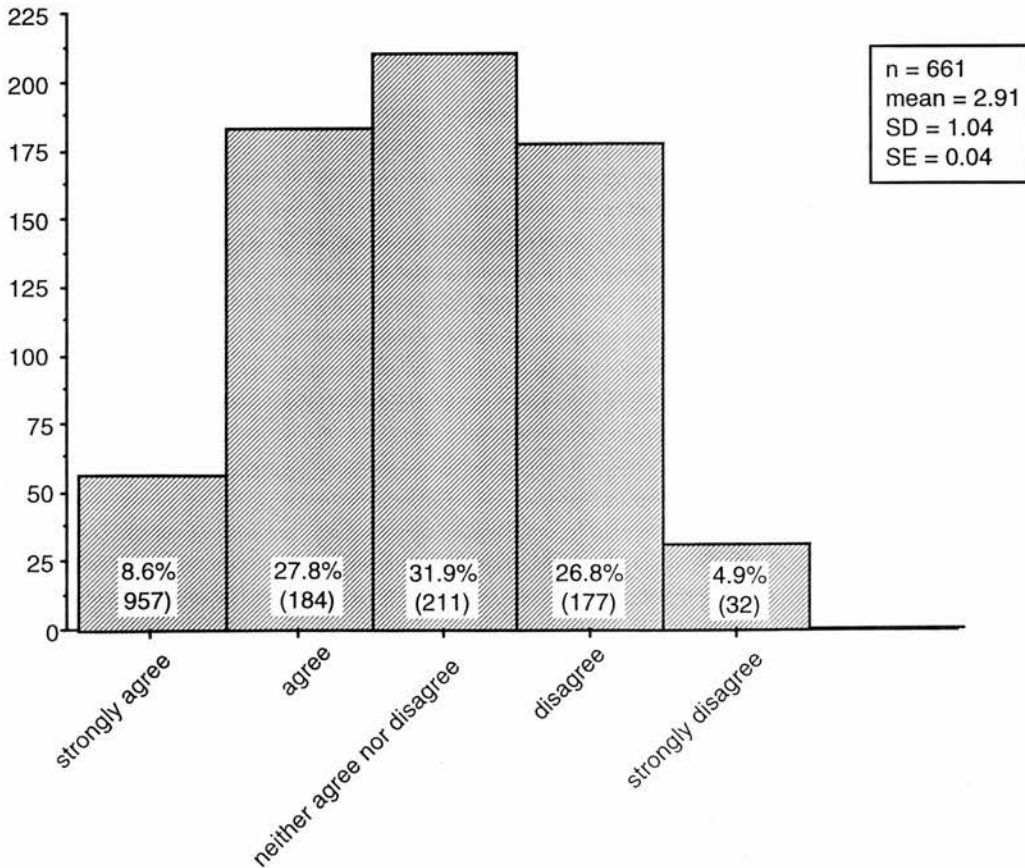
**29l We do not have the resources (staff/equipment) to implement new ideas**



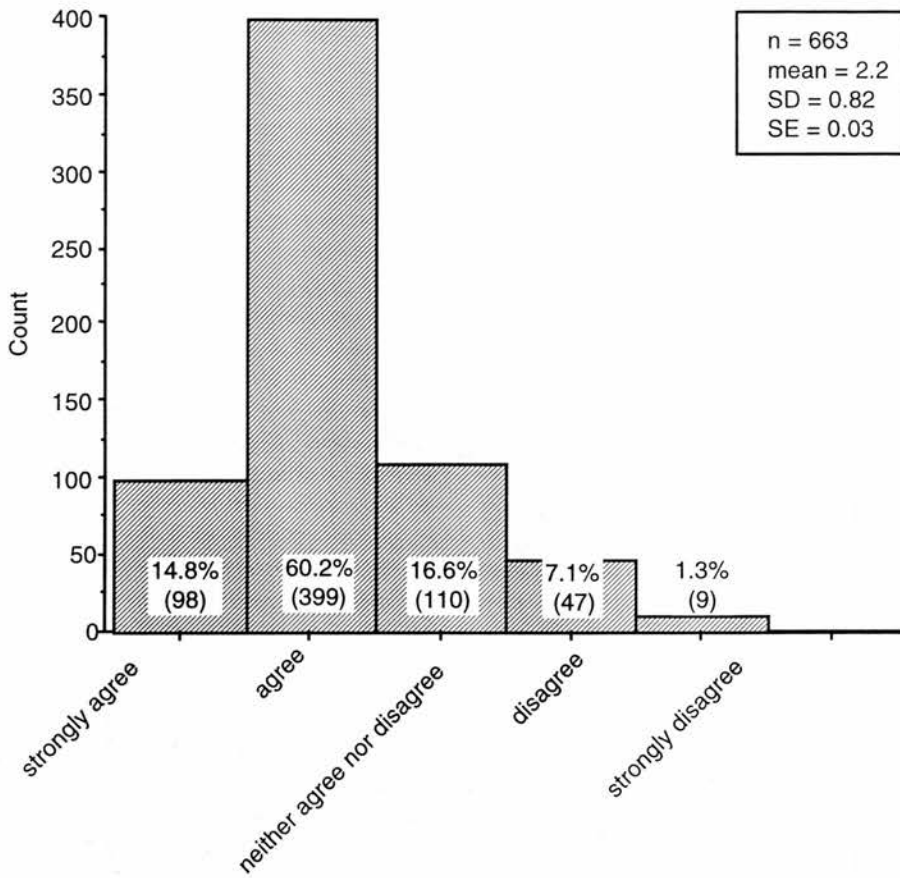
**29m The staff on this ward are encouraged to reflect on and question practice**



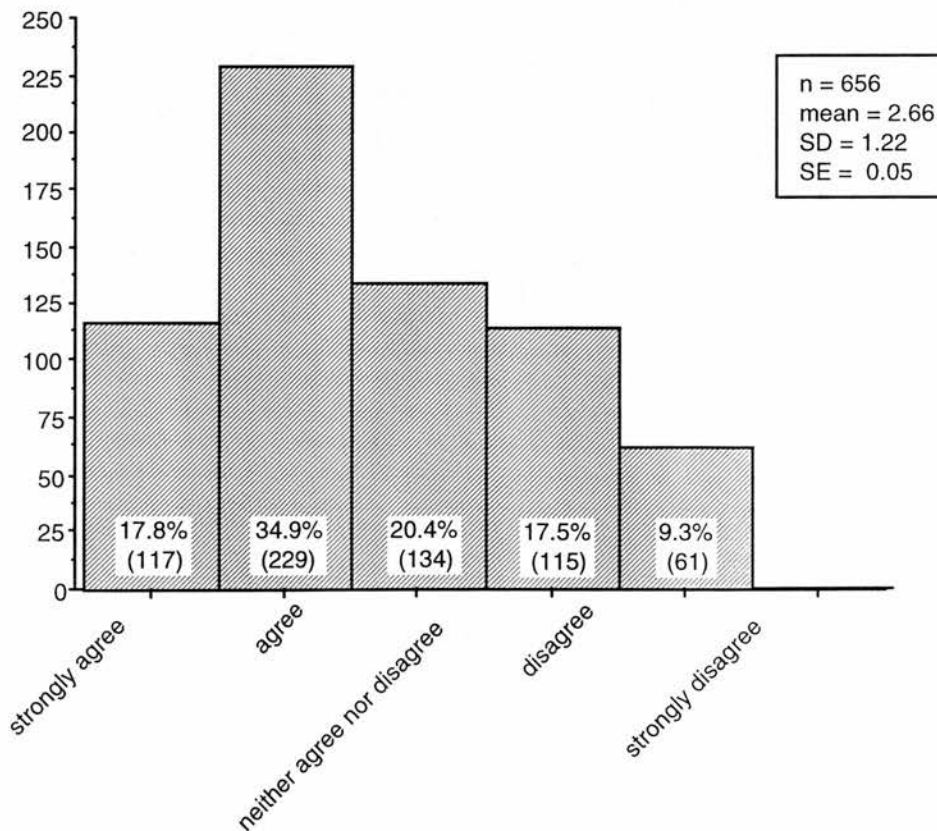
**29n Changes in practice are driven by senior managers**



**29o In this ward, nursing practice is based on a consideration of research, personal knowledge and experience**



**29p The charge nurse is a strong ward leader and motivator (Grades C,D,E, & F only)  
 My nurse manager is a strong leader and motivator ( G & H only)**



### Views on research articles in nursing journals and on the working environment.

(A score of 1= strongly agree, 5= strongly disagree)

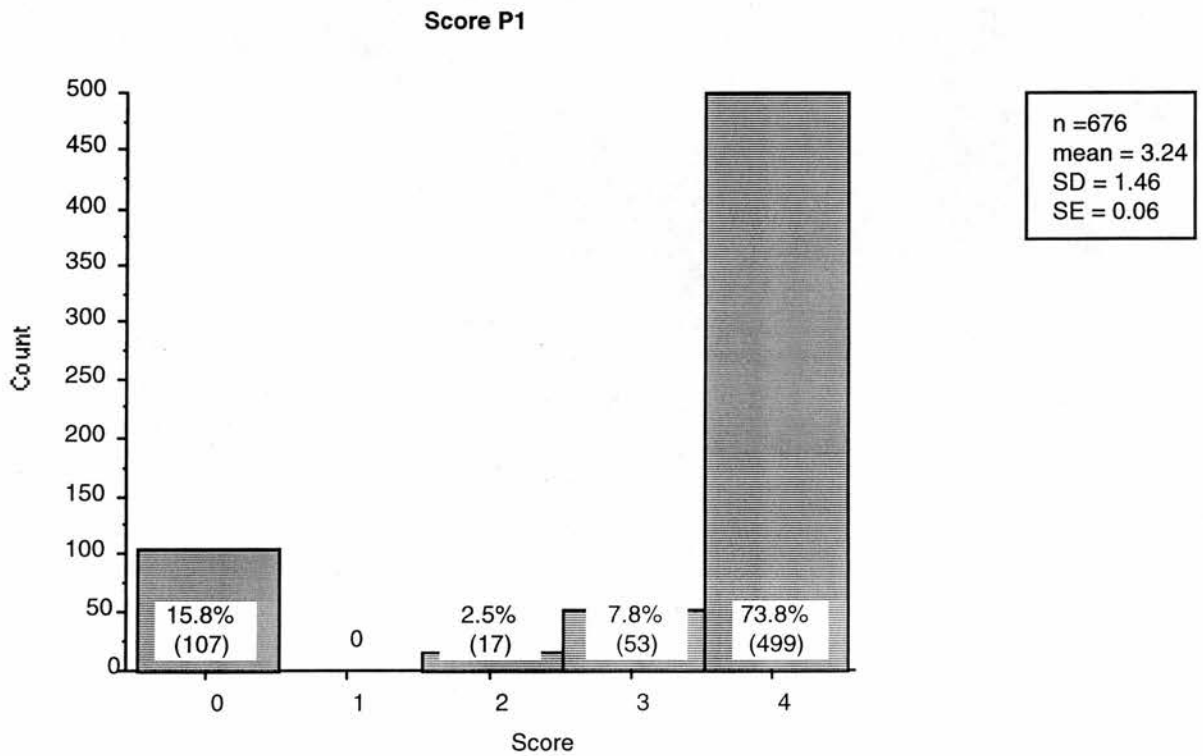
no.	Statement	mean	SD	n
28a	Research is very readable and easy to understand.	2.98	0.81	661
28b	There are too many journals to keep up to date with.	2.43	0.83	659
28c	Most nursing research is very relevant to my clinical practice.	2.92	0.81	661
28d	The articles contain a lot of difficult language and jargon.	2.88	0.91	663
28e	There are too many articles to read on most topics.	2.74	0.85	658
28f	It is difficult to know what the implications for practice are.	2.86	0.89	658
29a	The nurse manager always gives strong support to help staff introducing change in the ward.	2.90	1.14	661
29b	The medical staff are not supportive in working with us to introduce changes in nursing practice.	2.79	0.99	664
29c	I feel I have the authority to make decisions about nursing practice in the ward.	2.6	1.08	667
29d	There is too much bureaucracy and red tape in getting changes in nursing practice agreed.	2.3	0.93	663
29e	The multi-disciplinary team are very co-operative in working with us to introduce changes in nursing practice.	2.74	0.88	663
29f	The other departments in the hospital are very co-operative in working with us to introduce changes in nursing practice.	3.11	0.83	663
29g	In this ward, nursing practice is based on the way it has always been done.	3.76	0.99	666
29h	There is no time to look at and / or implement new ideas.	3.53	1.01	663
29i	I feel constrained by the hierarchy in making changes in practice.	2.93	1.05	659
29j	Care is not routinised, but organised in a flexible manner according to patients' individual needs.	2.21	0.98	667
29k	Changes in practice are driven by the ward nurses.	2.20	0.82	662
29l	We do not have the resources (staff/equipment) to implement new ideas.	2.79	1.05	664

29m	The staff on this ward are encouraged to reflect on and question practice.	2.44	0.99	663
29n	Changes in practice are driven by senior managers.	2.91	1.04	661
29o	In this ward, nursing practice is based on a consideration of research, personal knowledge and experience.	2.20	0.82	663
29p	The charge nurse is a strong ward leader and motivator (Grades C, D, E, & F only) <b>OR</b> My nurse manager is a strong leader and motivator (G & H only)	2.66	1.22	663

## APPENDIX 10

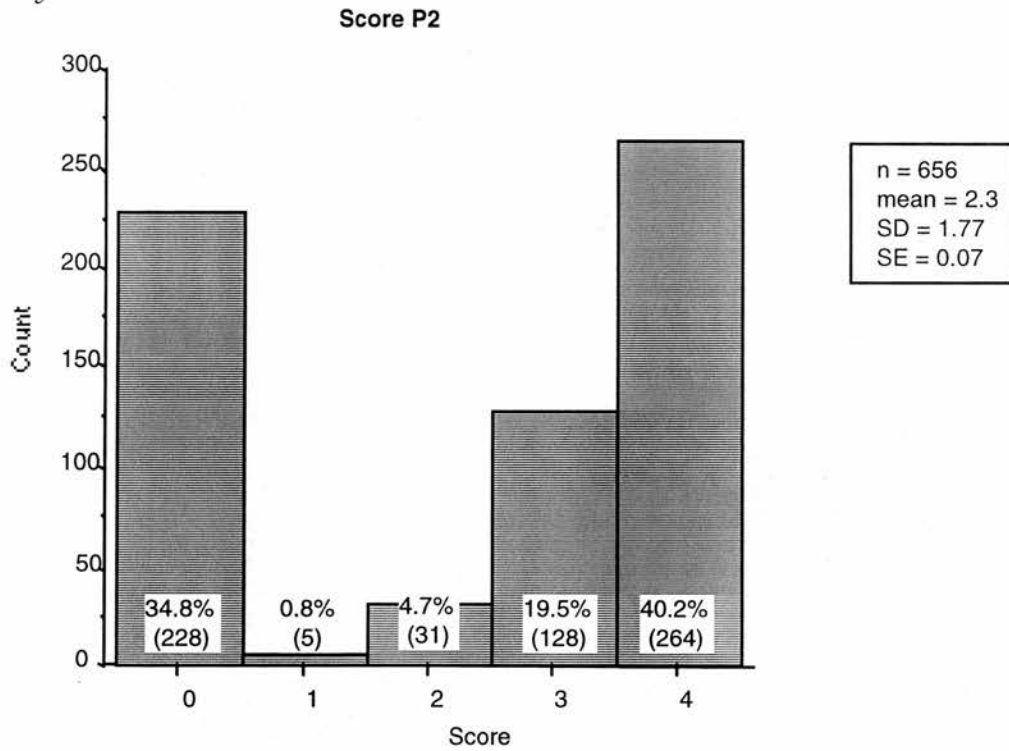
### Graphs of distribution of scores for each individual practice

1. "Any type of antiseptic causes damage to the tissues and is not effective in reducing contamination. In general wards, it is recommended that all wounds are cleansed with normasol or normal saline 0.9%."

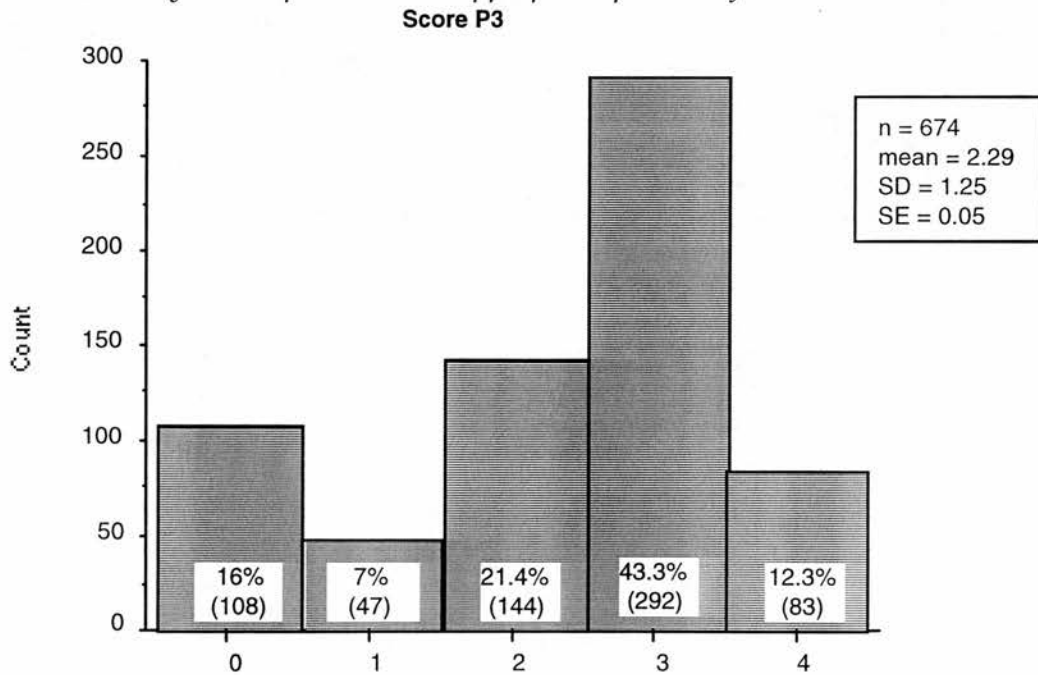




2. "Wounds, both granulating and sloughy, that are covered with dressings which lead to a moist and occluded environment heal faster than those s that are allowed to dry out."

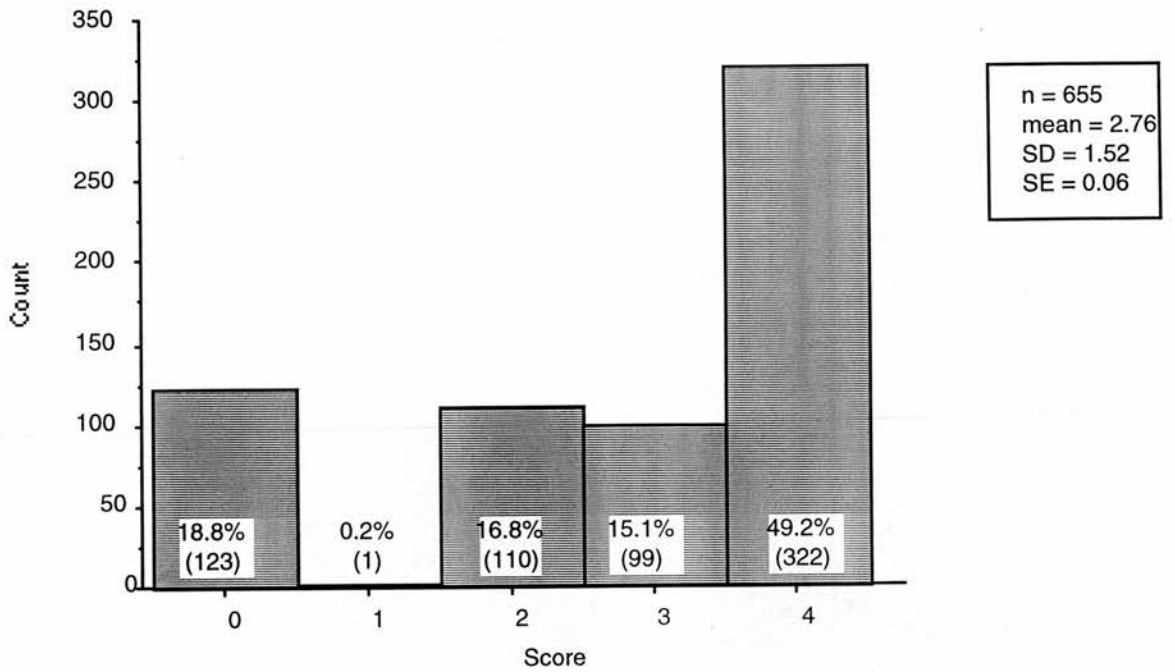


3. "Completing a pain assessment chart enables nurses to assess a patient's pain more accurately and so provide more appropriate pain relief."



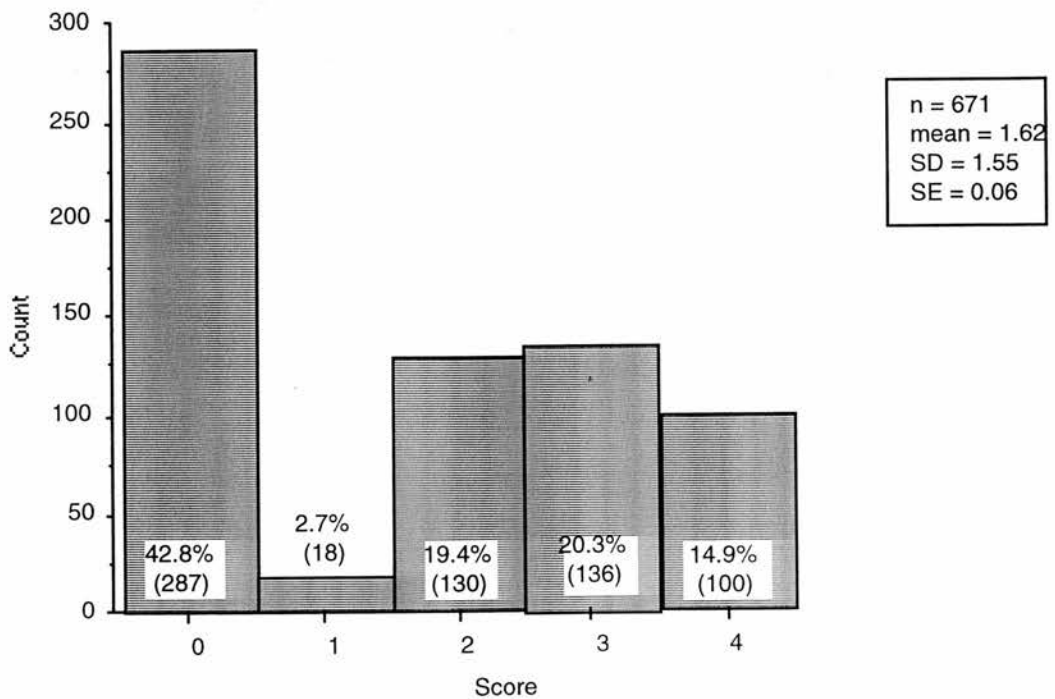
4. "Giving patients information pre-operatively about pain and pain control methods leads to a reduction in pain during the post-operative period."

Score P4



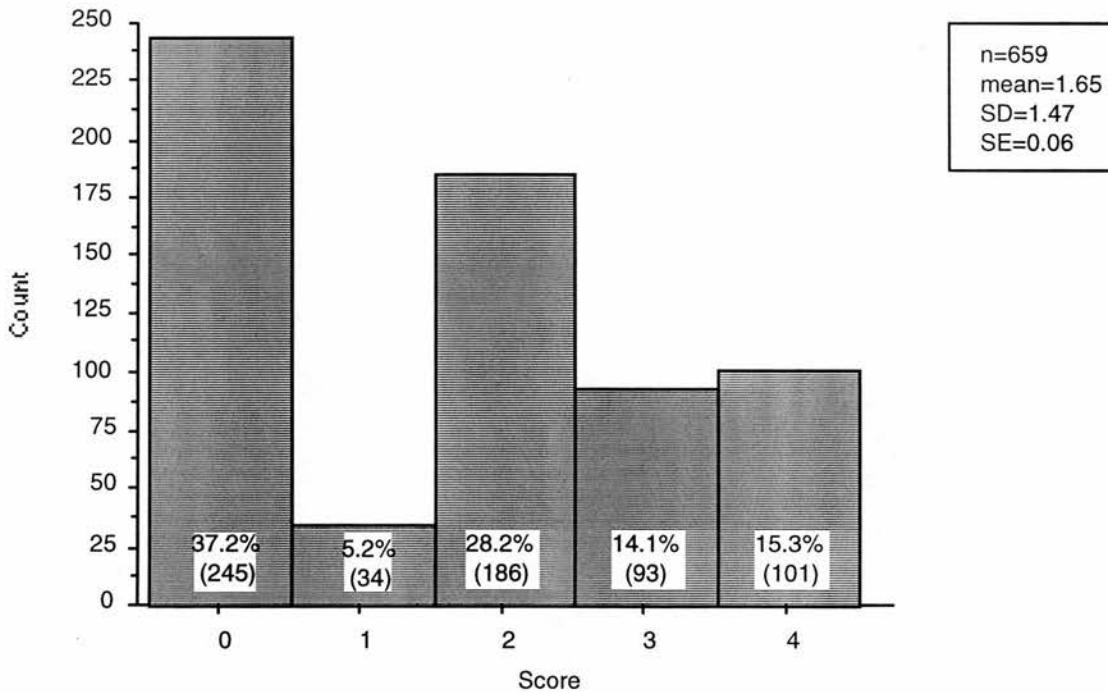
5. "Patients should be fasted for 4 hours in order to ensure an empty stomach prior to anaesthesia. Fasting for more than 6 hours can in itself lead to complications."

Score P5

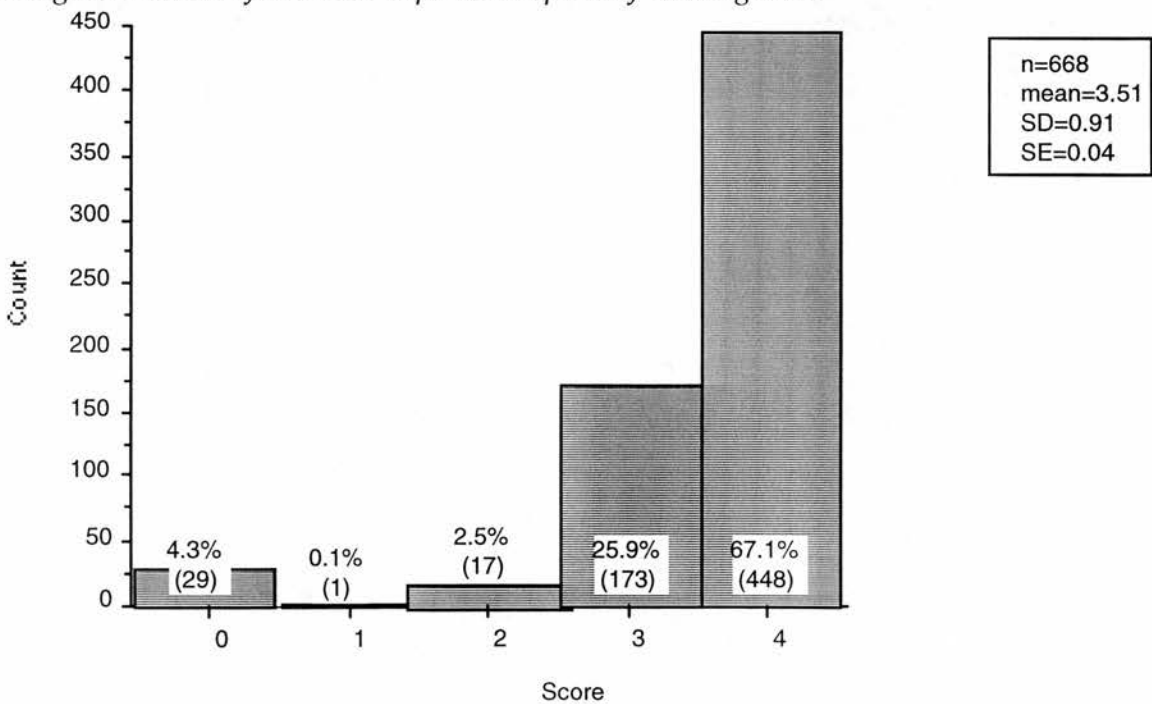


6. "Shaving leads to an increased rate of wound infection post-operatively. It is recommended that patients are not shaved or that hair is removed with clippers or depilatory cream. This leads to lower rates of wound infection post-operatively."

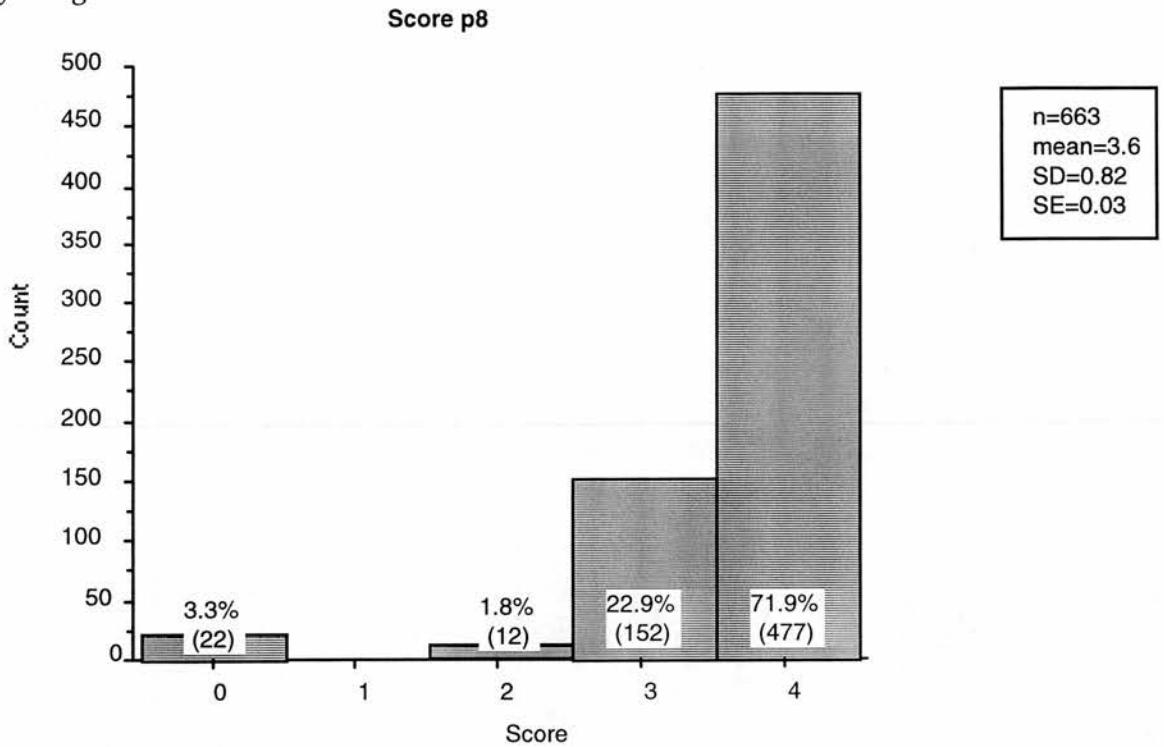
Score P6



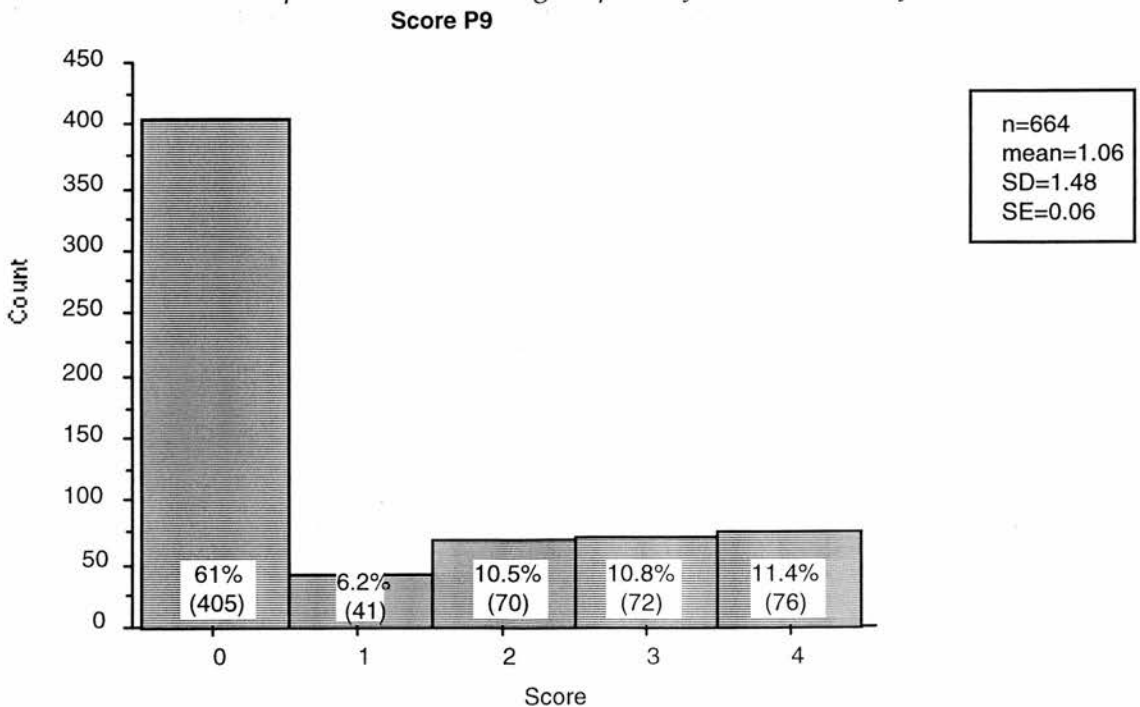
7. "Nurses often find it difficult to communicate with dying people and few patients are satisfied with this area of care. Communication with dying patients should be recognised as one of the most important aspects of nursing care."



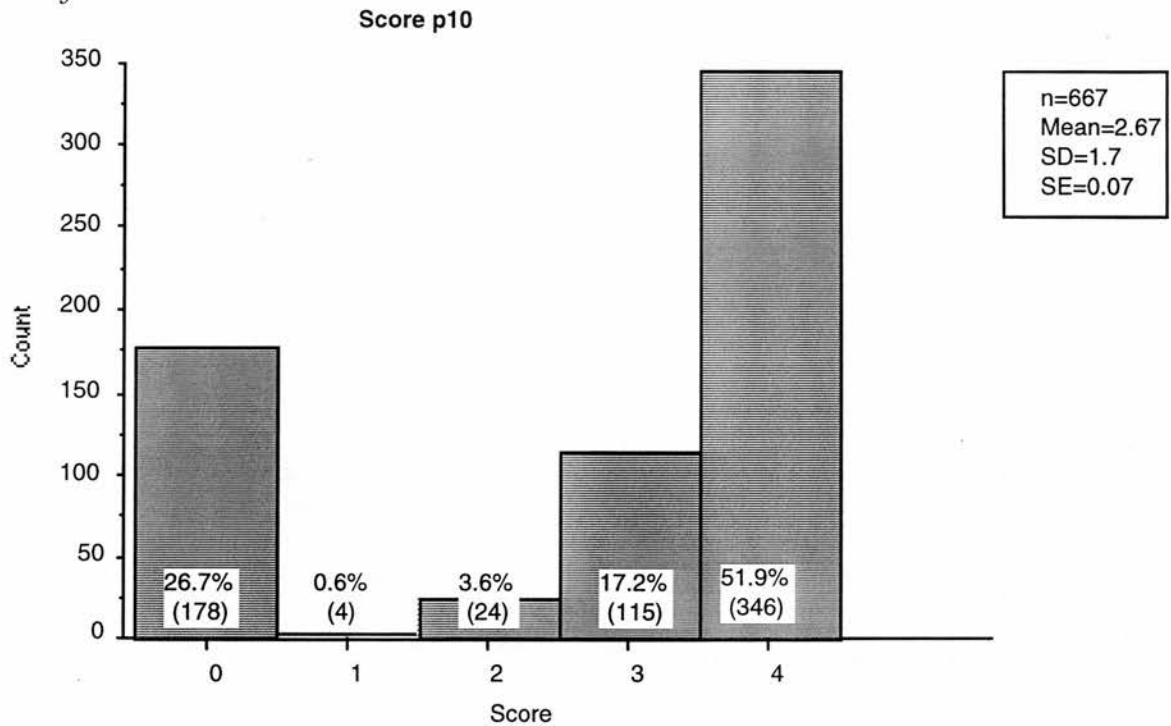
8. "There are several stages that dying patients may experience, for example denial, anger. A knowledge of these can help the nurse understand a patient's behaviour and feelings."



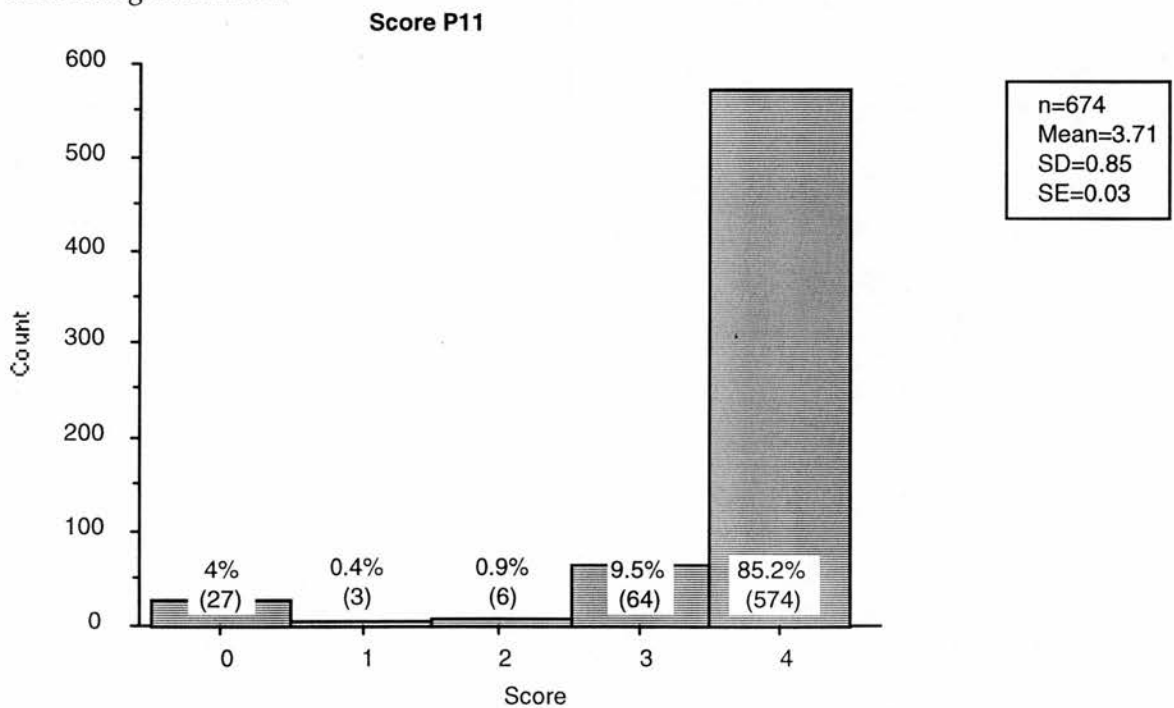
9 "For accurate recordings of oral temperatures using a mercury thermometer, the thermometer must be placed in the sublingual pocket for a minimum of 4 minutes."



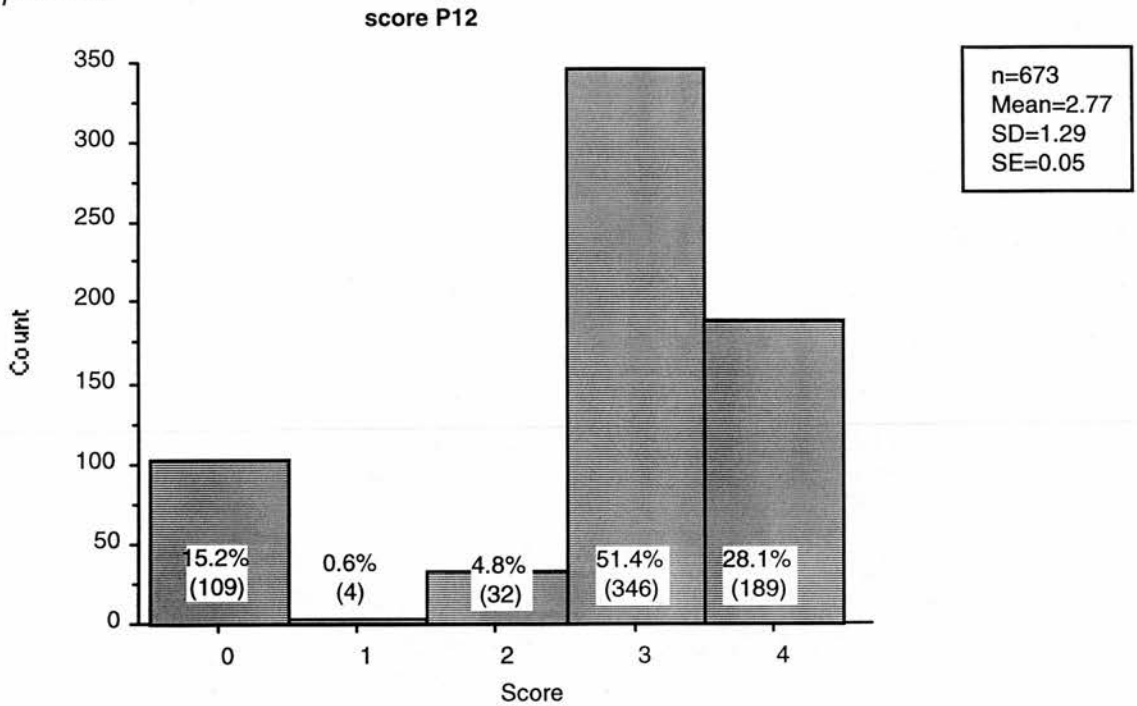
10. "100% silicone catheters (rather than silicone coated or latex ) are recommended for patients whose catheters are to remain in for longer than 6 weeks as they are less likely to block."



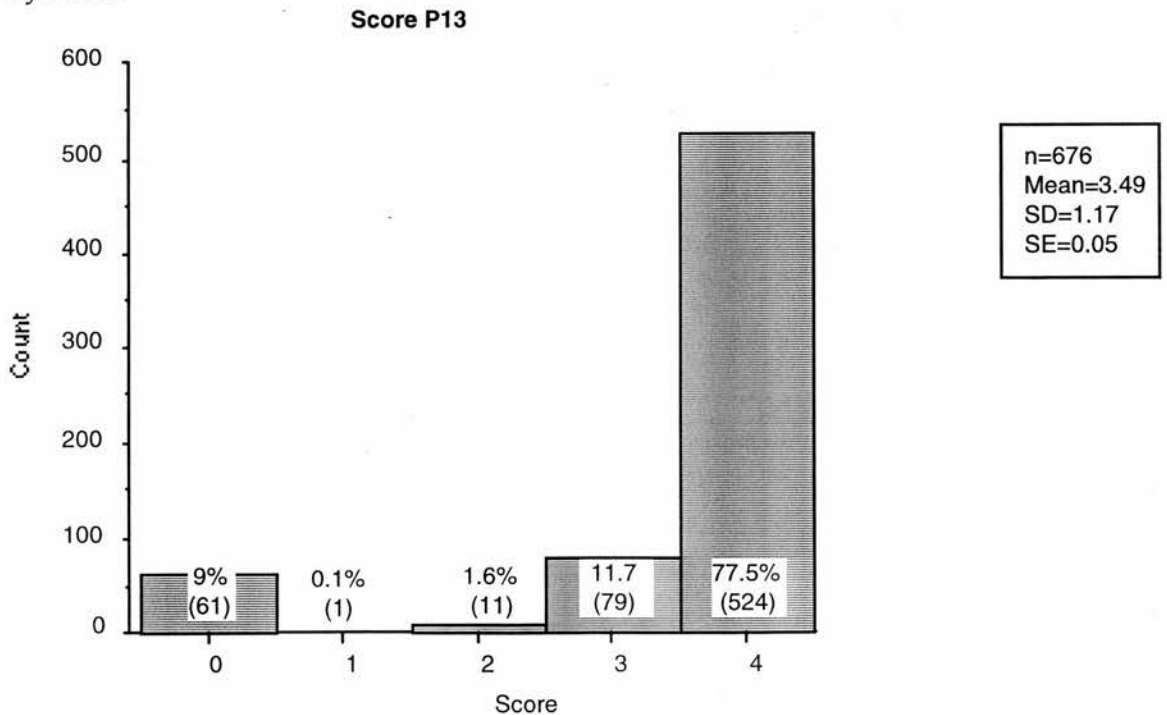
11. "Maintaining a closed drainage system for urinary catheters is one of the most important steps in the prevention of urinary tract infections in patients with indwelling catheters.."



12. "The use of deliberate touch by nurses for therapeutic means (for example holding of hands or hugging) has been shown to promote psychological well-being in some patients."

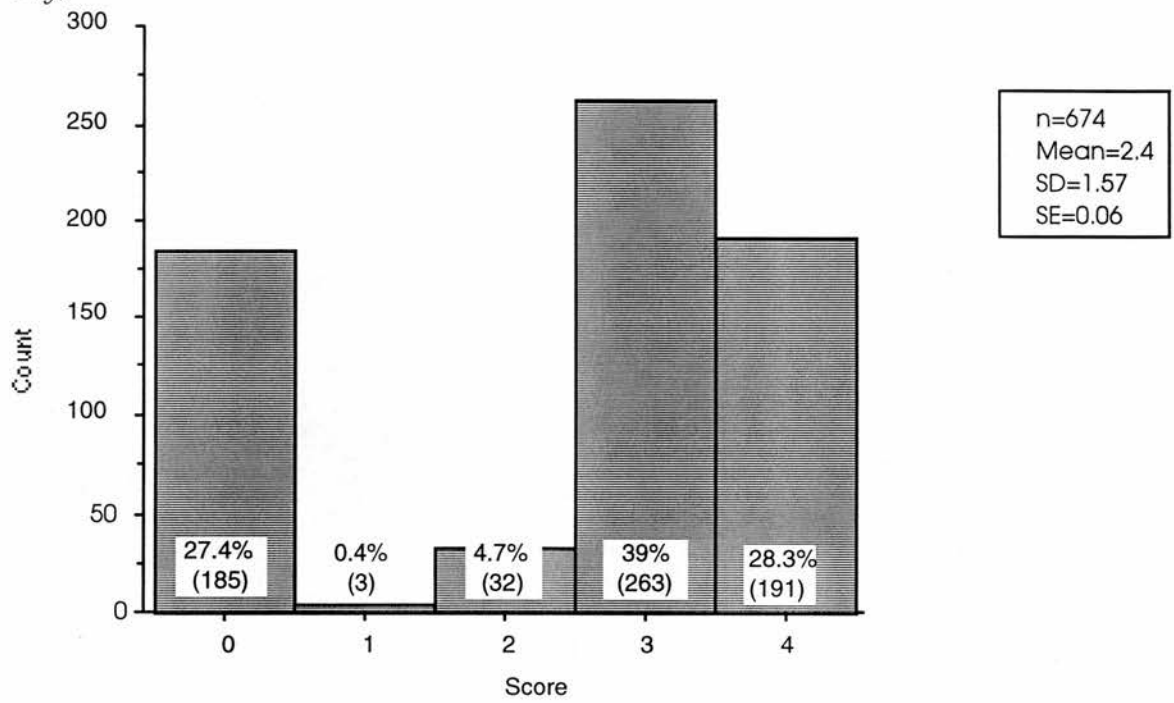


13. "In general wards, handwashing should be carried out with liquid soap or antiseptic solution rather than with a bar of soap in order to reduce the risk of cross-infection."





14. "For effective patient teaching, information should be given using a planned and structured approach rather than being given opportunistically or in an unplanned way,"



## APPENDIX 11

### Rates of 'not able to' use a practice and using a practice without believing in it

Numbers of nurses 'not able to' use a practice.

Practice	n	No. believing in use of a practice (score 2)	No. believing in use of a practice but 'not able to use'	% believing in use of a practice but 'not able to use'
1 'Wound cleansing'	676	17	1	6
2 'Moist wound healing'	656	32	7	22
3 'Pain assessment'	674	144	71	49
4 'Pre-op information'	655	110	79	72
5 'Pre-op fasting'	671	130	116	89
6 'Pre-op shaving'	659	185	148	80
7 'Communication with dying'	668	17	15	88
8 'Stages of dying'	663	12	9	75
9 'Temperature recording'	664	71	51	72
10 'Silicone catheters'	667	24	19	79
11 'Closed urinary drainage'	674	6	6	100
12 'Deliberative touch'	673	32	0	0
13 'Hand washing'	676	11	5	45
14 'Patient teaching'	674	32	15	47

**Rates of utilisation of a practice but without believing in its use.**

<b>Practice</b>	<b>n</b>	<b>No. not believing in using a practice but using it some-times or always</b>	<b>% . not believing in using a practice but using it some-times or always</b>
1 'Wound cleansing'	676	22	3
2 'Moist wound healing'	656	29	4
3 'Pain assessment'	674	36	5
4 'Pre-op information'	655	5	1
5 'Pre-op fasting'	671	6	1
6 'Pre-op shaving'	659	13	2
7 'Communication with dying'	668	2	<1
8 'Stages of dying'	663	1	<1
9 'Temperature recording'	664	8	1
10 'Silicone catheters'	667	5	1
11 'Closed urinary drainage'	674	1	<1
12 'Deliberative touch'	673	115	17
13 'Hand washing'	676	6	1
14 'Patient teaching'	674	17	2

**APPENDIX 12**

**Total mean research utilisation score (RUS) of each hospital (sorted by mean RUS weighted to individual nurse level)**

<b>Code No. (bed no.)</b>	<b>Hospital Size</b>	<b>Mean RUS (un-weighted)</b>	<b>Mean RUS weighted to individual nurse level</b>	<b>Mean RUS weighted to ward level</b>	<b>Response rate of nurses</b>	<b>No. nurses responding / no. sampled</b>
314 (560)	Large	2.98	2.94	2.94	61.3%	19/31
106 (124)	Small	2.90	2.93	2.93	80%	12/15
202 (280)	Medium	2.97	2.93	2.93	84.4%	27/32
206 (415)	Medium	2.81	2.90	2.74	73.5%	25/34
117 (28)	Small	2.76	2.88	2.88	50%	4/8
113 (54)	Small	2.83	2.82	2.84	69.2%	18/26
120 (29)	Small	2.75	2.80	2.74	100%	10/10
204 (378)	Medium	2.74	2.78	2.73	76.7%	46/60
108 (154)	Small	2.71	2.76	2.72	71.4%	20/28
107 (21)	Small	2.62	2.73	2.73	50%	4/8
112 (44)	Small	2.63	2.65	2.63	87.5%	14/16
303 (578)	Large	2.58	2.63	2.58	64.7%	22/34
306 (552)	Large	2.64	2.63	2.68	69%	49/71
115 (248)	Small	2.66	2.62	2.63	64.6%	31/48
312 (869)	Large	2.62	2.61	2.60	75.4%	117/155
104 (158)	Small	2.60	2.60	2.63	60%	15/25
126 (59)	Small	2.58	2.59	2.59	100%	8/8
315 (902)	Large	2.62	2.59	2.51	65.4%	34/52
207 (484)	Medium	2.63	2.58	2.57	69.2%	18/26

<b>Code No. (bed no.)</b>	<b>Hospital Size</b>	<b>Mean RUS (un-weighted)</b>	<b>Mean RUS weighted to individual nurse level</b>	<b>Mean RUS weighted to ward level</b>	<b>Response rate of nurses</b>	<b>No. nurses responding / no. sampled</b>
102 (240)	Small	2.51	2.53	2.53	100%	5/5
208 (468)	Medium	2.50	2.50	2.50	78.4%	40/51
211 (500)	Medium	2.56	2.50	2.53	83.1%	54/65
308 (510)	Large	2.52	2.46	2.45	59.6%	28/47
311 (550)	Large	2.51	2.45	2.49	68.3%	43/63
103 (69)	Small	2.43	2.41	2.40	89.5%	17/19
Total – all hospitals		2.67	2.65	2.66	72.6%	680/936

## APPENDIX 13

### Inferential Statistics on total mean RUS and variables from the Charge/Staff Nurse Questionnaire.

**Summary of tests between the means of two or more sub-groups of data from Staff Nurse & Charge Nurse questionnaires on total mean research utilisation score (RUS).**

Kruskal- Wallis test used on variables with 3 or more categories, and Mann-Whitney test used on variables with 2 categories.

Variable	Categories	n	Mean RUS	SD	Test Result	Total n
Hospital size	Small	158	2.67	0.59	NS	680
	Medium	210	2.68	0.58		
	Large	312	2.62	0.56		
Hospital location	Rural	150	2.73	0.57	NS	680
	Suburban	413	2.63	0.58		
	Urban	117	2.62	0.55		
Hospital type	Teaching	349	2.62	0.57	NS	680
	Non teaching	331	2.67	0.58		
Whether ward a speciality	Yes	400	2.65	0.59	NS	615
	No	215	2.67	0.55		
Whether ward a training area	Yes	621	2.65	0.57	NS	675
	No	51	2.57	0.59		
Ward type	Surgical	265	2.80	0.52	H=50.15 p=0.0001	673
	Predom. Surgical	37	2.80	0.60		
	Medical	317	2.50	0.56		
	Predom Medical	42	2.62	0.70		
	Mixed	12	2.87	0.46		
	Surgical	302	2.80	0.53	H=47.84 p=0.0001	673
	Medical	359	2.51	0.58		
	Mixed	12	2.87	0.45		
Gender	Male	43	2.70	0.57	NS	680
	Female	637	2.64	0.58		
Highest qualification	Degree or Professional Studies	174	2.78	0.59	z=-3.819 p=0.001	679
	All others	505	2.60	0.56		
	Degree	37	2.86	0.57	z=-2.58 p=0.01	679
	All others	642	2.64	0.57		
	2nd level reg	71	2.52	0.69	H=16.36 p=0.001	679
	1st level reg	434	2.61	0.54		
Professional Studies	137	2.70	0.61			
Degree	37	2.86	0.57			



Job title	Enrolled Nurse	72	2.53	0.69	NS	679
	Staff Nurse	471	2.64	0.56		
	Charge Nurse	118	2.75	0.53		
	Clin Nurse Spec	3	2.20	0.58		
	Senior Nurse	5	2.89	0.58		
	Other	10	2.58	0.53		
	Charge Nurse	118	2.75	0.53		
	All others	561	2.63	0.58		
Availability of study leave	Yes	373	2.65	0.59	NS	623
	No	250	2.66	0.54		
Type of study leave	Paid leave	275	2.27	0.87	NS	371
	Not paid leave	96	2.34	0.98		
Whether studied nursing research	Yes	274	2.77	0.55	H=21.42 p=0.0001	665
	No	385	2.57	0.59		
	Don't know	6	2.33	0.62		
	Yes	274	2.77	0.55	z=-4.44	659
	No	385	2.57	0.59	p=0.0001	
Information on research utilisation	Yes	75	2.84	0.49	NS	250
	No	98	2.72	0.56		
	Don't know	77	2.75	0.57		
Means of study providing information on research utilisation	Part of course	36	2.88	0.55	NS	64
	All others	28	2.82	0.46		
Topic taught based on nursing research	Yes	211	2.77	0.53	z=-4.93 p=0.0001	408
	No	197	2.51	0.56		
	Yes	211	2.77	0.53	H=23.82 p=0.0001	568
	No	197	2.51	0.56		
Don't know	160	2.62	0.61			
Library access	Yes – on-site	369	2.68	0.56	NS	663
	Yes– offsite	243	2.62	0.61		
	No	46	2.59	0.58		
	Don't know	5	2.60	0.44		
Circulation of research summaries	Yes	234	2.76	0.59	z=-3.37 p=0.0007	617
	No	383	2.61	0.56		
	Yes	234	2.76	0.59	H=17.36 p=0.0002	652
	No	383	2.61	0.56		
Don't know	35	2.39	0.64			
Whether ward gets journals	Yes	265	2.71	0.58	z=-2.68 p=0.0074	649
	No	384	2.60	0.58		
	Yes	256	2.71	0.58	H=8.70 p=0.0129	662
	No	384	2.60	0.58		
Don't know	13	2.83	0.45			
Read ward journals	Yes	241	2.73	0.56	NS	277
	No	36	2.53	0.64		
Journals read	Regularly read at least 1	401	2.71	0.57	z=-2.98 p=0.0029	664
	Occ. read at least 1	263	2.55	0.59		

Read Nursing Times	Regularly	223	2.73	0.54	NS	594
	Occasionally	351	2.61	0.60		
	Never	10	2.70	0.58		
Read Nursing Standard	Regularly	162	2.69	0.61	NS	502
	Occasionally	301	2.65	0.58		
	Never	39	2.61	0.65		
Read Professional Nurse	Regularly	105	2.84	0.56	H=11.68 p=0.0029	419
	Occasionally	233	2.67	0.56		
	Never	81	2.55	0.56		
Read 'other' journal	Regularly	55	2.89	0.51	H=13.22 p=0.0013	137
	Occasionally	48	2.83	0.47		
	Never	34	2.45	0.59		

### Correlation tests between variables and total mean RUS

Variable	n	Correlation test	Significance
Age group	678	Pearsons	NS
Length of time qualified	677	Pearsons	NS
Length of time on current ward	680	Pearsons	NS
Job satisfaction	674	Spearman's Rho	Rho=0.084 z=2.188 p=0.0287
No. of study days attended	652	Pearsons	NS
Sq Root No. of study days attended	652	Pearsons	r=0.095 p<0.05
No. of study days funded	630	Pearsons	NS
Time spent studying on duty	503	Pearsons	NS
Time spent studying off duty	580	Pearsons	r=0.1 p<0.05
Clinical grade	680	Spearman's Rho	Rho= 0.08 z=2.14 p=0.0322
Highest qualification	679	Spearman's Rho	Rho= 0.15 z=3.84 p=0.0001

**Correlation tests (all Pearson's r) between statements 28a to 29p (their views on research articles in nursing journals and their working environment) and total mean RUS. (NB. -ve correlation indicates the greater the agreement with the statement, the higher the research utilisation score).**

no.	Statement	n	Test
28a	Research is very readable and easy to understand.	661	NS
28b	There are too many journals to keep up to date with.	659	NS
28c	Most nursing research is very relevant to my clinical practice.	661	r= -0.091 p<0.05
28d	The articles contain a lot of difficult language and jargon.	663	NS
28e	There are too many articles to read on most topics.	658	r= 0.103 p<0.05
28f	It is difficult to know what the implications for practice are.	658	r= 0.148 p<0.001
29a	The nurse manager always gives strong support to help staff introducing change in the ward.	661	NS
29b	The medical staff are not supportive in working with us to introduce changes in nursing practice.	664	NS
29c	I feel I have the authority to make decisions about nursing practice in the ward.	667	NS
29d	There is too much bureaucracy and red tape in getting changes in nursing practice agreed.	663	NS
29e	The multi-disciplinary team are very co-operative in working with us to introduce changes in nursing practice.	663	NS
29f	The other departments in the hospital are very co-operative in working with us to introduce changes in nursing practice.	663	NS
29g	In this ward, nursing practice is based on the way it has always been done.	666	r= 0.122 p<0.01
29h	There is no time to look at and / or implement new ideas.	663	NS
29i	I feel constrained by the hierarchy in making changes in practice.	659	r= 0.125 p<0.01
29j	Care is not routinised, but organised in a flexible manner according to patients' individual needs.	667	r= -0.089 p<0.05
29k	Changes in practice are driven by the ward nurses.	662	r= -0.117 p<0.01
29l	We do not have the resources (staff/equipment) to implement new ideas.	664	NS
29m	The staff on this ward are encouraged to reflect on and question practice.	663	r= -0.117 p<0.01
29n	Changes in practice are driven by senior managers.	661	r= 0.115 p<0.01
29o	In this ward, nursing practice is based on a consideration of research, personal knowledge and experience.	663	r= -0.097 p<0.05
29p	The charge nurse is a strong ward leader and motivator (Grades C, D, E, & F only) <b>OR</b> My nurse manager is a strong leader and motivator (G & H only)	663	NS



## APPENDIX 14

### Inferential Statistics on total mean RUS and variables from the Director of Nursing's Questionnaire.

**Tests of difference of total mean RUS of hospital (weighted to individual nurse level) between two or more sub-groups of hospital variables from Director's of Nursing questionnaires.**

Kruskal- Wallis test used on variables with 3 or more categories, and Mann-Whitney test used on variables with 2 categories.

<b>Variable</b>	<b>Categories</b>	<b>Test result &amp; significance</b>	<b>n</b>
Hospital size	Small Medium Large	NS	25
Hospital location	Rural Suburban Urban	NS	25
Hospital type	Teaching Non teaching	NS	25
Full-time quality assurance nurses	Yes/No	NS	18
Full-time continuing education nurses	Yes/No	NS	15
Full-time nursing research nurses	Yes/No	NS	14
Nurses with designated responsibility for quality assurance	Yes/No	NS	16
Nurses with designated responsibility for continuing education	Yes/No	NS	16
Nurses with designated responsibility for nursing research	Yes/No	NS	14
Time given to nurses to do research?	i. Yes/No	NS	20
	ii. Full-time Part-time FT & PT No Don't know	NS	20
Research committees?	Yes/No/Don't know	NS	20



Type of research committee	<b>i.</b> Unit or Trust / Others	NS	9
	<b>ii.</b> Nursing research committee / Others	NS	9
	<b>iii.</b> Other type of committee / Others	z=-2.0 p=0.0455 (Yes<No)	9
Research done in past 12 months	<b>i.</b> Yes/No/Don't know	NS	19
	<b>ii.</b> Yes/No	NS	17
Type of research carried out	<b>i.</b> Research directed by medical staff / Other	NS	12
Involvement of nurses in research	<b>i.</b> Yes/No/Don't know	NS	19
	<b>ii.</b> Yes/No	NS	17
Type of research nurses involved in	<b>i.</b> Research directed by nurses / Others	NS	12
	<b>ii.</b> Research directed by medical staff / Others	NS	12
	<b>iii.</b> Research directed by other / Others	NS	12
Availability of study leave	<b>i.</b> Yes/No	NS	19
	<b>ii.</b> Yes / No / Don't know	NS	20
Type of study leave	<b>i.</b> Paid leave / Others	z=-2.206 p=.0395	19
	<b>i.i</b> Unpaid leave / Others	NS	19
	<b>iii.</b> Fees paid / Others	z=-2.262 p=.0237	19
	<b>i.v</b> Fees or leave paid / Others	NS	19
	<b>v</b> Travel paid / Others	z=-2.314 p=.0208	19
Library access	<b>i.</b> Yes No	NS	20
Circulation of research summaries	<b>i</b> Yes/No	NS	19
	<b>ii.</b> Yes/No / Don't know	NS	20

**Correlation between total mean RUS of hospital (weighted to individual nurse level) and hospital level variables. (All Pearson's r).**

<b>Variable</b>	<b>n</b>	<b>r</b>	<b>Significance</b>
Bed no.	25	-0.276	NS
Bed no. minus 2 outliers	23	-0.474	p<0.025
No. of hospital procedures	15	0.263	NS
No. of hospital policies	13	-0.273	NS
No. of WTE trained & untrained nurses (day & night duty)	19	-0.173	NS
No. of 1st level registered nurses	18	-0.112	NS
No. of trained nurses	18	0.162	NS
No. of WTE staff/bed	19	0.053	NS
No. of trained staff/bed	18	0.209	NS
No. of 1st level registered nurses / bed	19	0.302	NS
% Trained staff	18	0.334	NS
% 1st level registered nurses	19	0.458	p<0.05



## APPENDIX 15

### Relationships of mean RUS with belief in the existence of a policy or procedure and with actual existence of a policy or procedure.

**Comparing mean RUS of nurses working in hospitals where a policy or procedure exists to the mean RUS of nurses working in hospitals where there is no policy or procedure (all Mann Whitney U tests) (\*mean RUS of all those who work in hospitals where a policy or procedure exists was higher)**

	<b>Practice</b>	<b>Mann Whitney test</b>	<b>Significance</b>	<b>N</b>
1	'Wound cleansing'	Not significant	-	493
2	'Moist wound healing'	Not significant	-	493
3	'Pain assessment'	Not significant	-	520
4	'Pre-op information'	Not significant	-	503
5	'Pre-op fasting'	Not significant	-	520
6	'Pre-op shaving'	Not significant	-	499
7	'Communication with dying'	Not significant	-	520
8	'Stages of dying'	Not significant	-	520
9	'Temperature recording'	z=-3.568	p<0.0004*	503
10	'Silicone catheters'	Not significant	-	516
11	'Closed urinary drainage'	Not significant	-	516
12	'Deliberative touch'	Not significant	-	516
13	'Hand washing'	z=-3.076	p<0.0021*	520
14	'Patient teaching'	Not significant	-	520

**Comparing mean RUS of nurses who believe a policy or procedure exists to the mean RUS of nurses believe there to be no policy or procedure (all Mann Whitney U tests, mean RUS of all those who believe there to be a policy higher)**

	<b>Practice</b>	<b>Mann Whitney test</b>	<b>Significance</b>	<b>n</b>
1	'Wound cleansing'	z=-10.520	p<0.0001	667
2	'Moist wound healing'	z=-15.150	p<0.0001	654
3	'Pain assessment'	z=-12.480	p<0.0001	672
4	'Pre-op information'	z=-11.045	p<0.0001	648
5	'Pre-op fasting'	z=-12.920	p<0.0001	669
6	'Pre-op shaving'	z=-10.523	p<0.0001	655
7	'Communication with dying'	z=-4.431	p<0.0001	664
8	'Stages of dying'	z=-3.057	p<0.0005	656
9	'Temperature recording'	z=-13.027	p<0.0001	659
10	'Silicone catheters'	z=-12.633	p<0.0001	663
11	'Closed urinary drainage'	z=-8.651	p<0.0001	668
12	'Deliberative touch'	z=-4.672	p<0.0001	665
13	'Hand washing'	z=-13.318	p<0.0001	673
14	'Patient teaching'	z=-12.902	p<0.0001	671



APPENDIX 16

Correlation matrix of multiple regression variables (page 1)

	Bed no.	Age	High. Qual.	Time qualified	Clinical Grade	Time in current ward	Job Satis.	Study days past 12 m	28F	29B	29H	29I	29N	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	
Bed no.	1	-0.191	0.16	-0.162	0.037	-0.188	-0.016	0.034	0.005	-0.021	0.021	0.096	-0.004	-0.128	-0.028	-0.041	0.064	-0.067	-0.036	
Age	-0.191	1	-0.206	0.749	0.377	0.413	0.1	0.049	0.067	0.008	0.052	0.12	0.027	-0.103	-0.004	-0.054	-0.073	-0.009	0.034	
Highest qual.	0.16	-0.206	1	-0.127	0.249	-0.095	-0.008	0.244	0.126	0.084	0.082	0.074	0.09	-0.134	0.018	-0.009	0.122	0.004	0.079	
Time qualified	-0.162	0.749	-0.127	1	0.536	0.516	0.049	0.123	0.089	-0.052	0.078	0.143	0.069	-0.163	0.043	-0.028	-0.055	-0.001	0.035	
Clinical Grade	0.037	0.377	0.249	0.536	1	0.304	0.053	0.181	0.131	-0.008	0.181	0.223	0.178	-0.349	0.027	-0.094	0.057	0.05	0.125	
Time in current ward	-0.188	0.413	-0.095	0.516	0.304	1	0.064	0.106	-0.007	0.017	0.079	0.114	0.034	-0.145	0.001	-0.051	-0.099	0.013	0.083	
Job Satis.	-0.016	0.1	-0.008	0.049	0.053	0.064	1	-0.031	0.117	0.182	0.335	0.363	0.069	-0.386	-0.191	-0.247	0.041	-0.362	0.244	
Study days past 12 m	0.034	0.049	0.244	0.123	0.181	0.106	-0.031	1	0.14	-0.035	0.038	0.096	0.021	-0.087	-0.02	0.016	0.067	-0.02	0.131	
28F	0.005	0.067	0.126	0.089	0.131	-0.007	0.117	0.14	1	0.169	0.107	0.092	0.07	-0.143	-0.248	-0.099	0.238	-0.029	0.206	
29B	-0.021	0.008	0.084	-0.052	-0.008	0.017	0.182	-0.035	0.169	1	0.227	0.175	0.12	-0.164	-0.107	-0.293	0.065	-0.096	0.309	
29H	0.021	0.052	0.082	0.078	0.181	0.079	0.335	0.038	0.107	0.227	1	0.447	0.131	-0.505	-0.048	-0.227	0.065	-0.282	0.329	
29I	0.096	0.12	0.074	0.143	0.223	0.114	0.363	0.096	0.092	0.175	0.447	1	0.256	-0.519	-0.089	-0.295	0.11	-0.405	0.414	
29N	-0.004	0.027	0.09	0.069	0.178	0.034	0.069	0.021	0.07	0.12	0.131	0.256	1	-0.26	0.012	-0.059	-0.002	0.002	0.154	
Factor 1	-0.128	-0.103	-0.134	-0.163	-0.349	-0.145	-0.386	-0.087	-0.143	-0.164	-0.505	-0.519	-0.26	1	0.08	0.322	-0.089	0.427	-0.214	
Factor 2	-0.028	-0.004	0.018	0.043	0.027	0.001	-0.191	-0.02	-0.248	-0.107	-0.048	-0.089	0.012	0.08	1	0.119	-0.23	0.126	-0.112	
Factor 3	-0.041	-0.054	-0.009	-0.028	-0.094	-0.051	-0.247	0.016	-0.099	-0.293	-0.227	-0.295	-0.059	0.322	0.119	1	-0.122	0.288	-0.216	
Factor 4	0.064	-0.073	0.122	-0.055	0.057	-0.099	0.041	0.067	0.238	0.065	0.065	0.11	-0.002	-0.089	-0.23	-0.122	1	-0.06	0.193	
Factor 5	-0.067	-0.009	0.004	-0.001	0.05	0.013	-0.362	-0.02	-0.029	-0.096	-0.282	-0.405	0.002	0.427	0.126	0.288	-0.06	1	-0.196	
Factor 6	-0.036	0.034	0.079	0.035	0.125	0.083	0.244	0.131	0.206	0.309	0.329	0.414	0.154	-0.214	-0.112	-0.216	0.193	-0.196	1	
CN/																				
other title	0.022	0.38	0.067	0.464	0.791	0.193	0.08	0.096	0.117	0.01	0.192	0.225	0.214	-0.318	0.017	-0.103	0.045	0.021	0.145	
Urban dummy	0.57	-0.06	-0.02	-0.08	-0.061	-0.145	0.02	-0.118	0.012	-0.043	-0.05	0.018	0.007	-0.083	-0.048	0.031	0.026	-0.11	-0.112	



Correlation matrix of multiple regression variables (page 2)

	Bed no.	Age	High. Qual	Time qualified	Clinical Grade	Time in current ward	Job Satis.	Study days past yr	28F	29B	29H	29I	29N	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
Rural dummy	-0.756	0.192	-0.166	0.158	-0.061	0.156	0.05	-0.081	0.016	-0.004	-0.047	-0.069	0.006	0.099	0.039	0.023	-0.074	0.015	0.051
Teaching dummy	0.572	-0.123	0.12	-0.107	0.051	-0.161	0.037	0.017	-0.005	-0.025	-0.003	0.083	-0.003	-0.089	-0.124	0.007	0.042	-0.138	-0.028
Training area	0.152	-0.086	0.089	-0.075	-0.065	-0.051	0.024	0.029	-0.017	0.008	0.039	0.101	0.021	-0.044	-0.017	-0.02	0.017	-0.023	0.003
Surgical wd	-0.078	-0.021	0.013	0.007	0.005	0.029	0.067	0.017	0.018	-0.016	0.081	0.072	0.111	-0.091	-0.052	0.024	-0.022	-0.031	0.103
Male dummy	0.033	-0.026	0.033	-0.077	4.31E-04	-0.022	-0.136	0.032	0.072	-0.02	0.009	-0.037	-0.011	0.027	0.012	0.02	-0.012	0.064	-0.076
Y Study leave	-0.083	0.126	0.076	0.14	0.207	0.101	0.183	0.212	0.116	-0.001	0.134	0.19	0.062	-0.135	0.036	-0.104	-0.024	-0.143	0.196
Yes studied																			
N Research	-0.044	-0.083	0.257	-0.087	0.025	-0.098	0.034	0.119	0.153	0.072	0.073	0.021	0.077	-0.047	0.027	-0.005	0.135	0.048	0.094
Yes Library access	0.087	-0.012	0.056	-0.059	-0.029	0.006	0.096	0.084	0.077	0.061	0.058	0.066	0.028	-0.111	-0.038	-0.037	0.053	-0.069	0.091
Yes-circ of rsch n.journals	-0.205	0.052	-0.064	0.032	-0.044	0.034	0.15	-0.02	0.021	0.033	0.101	0.134	0.032	-0.17	-0.102	-0.091	-0.035	-0.196	0.02
Yes ward receives one journal	-0.329	0.142	-0.125	0.166	0.07	0.183	0.13	-0.05	0.016	0.067	0.145	0.123	0.076	-0.132	-0.029	-0.051	-0.033	-0.142	0.142
Regularly read																			
Yes-Ward a speciality	0.619	-0.112	0.056	-0.125	0.012	-0.153	0.015	-0.044	-0.006	0.035	0.061	0.05	-0.026	-0.093	-0.052	-0.044	0.059	-0.097	-0.036
Nursing Times Recode	0.262	-0.018	0.059	-0.017	0.023	-0.113	-0.011	0.043	0.011	0.008	0.028	-0.014	0.005	-0.077	-0.07	-0.029	-0.002	-0.064	-0.101
Nursing Standard Recode	-0.062	-0.065	0.073	-0.088	-0.017	-0.058	0.093	0.052	-0.067	0.036	0.092	0.042	0.009	0.001	0.006	0.02	0.048	-0.051	0.054
Professional Nurse Recode	-0.123	-0.039	-0.042	-0.088	-0.001	-0.015	-0.013	0.058	0.095	0.091	0.03	0.031	-0.007	0.029	0.031	-0.021	-0.007	-0.001	0.122
Other journal recode	0.004	-0.002	0.234	0.071	0.113	0.069	0.043	0.082	0.095	-0.034	0.064	0.081	0.053	-0.112	0.002	0.026	0.038	0.028	0.058
Yes -taught rsch based topic	0.067	0.017	0.298	0.086	0.235	-0.056	0.041	0.179	0.14	0.025	0.108	0.174	0.108	-0.127	0.017	0.005	0.035	-0.047	0.085
	-0.082	-0.072	0.164	-0.075	0.053	-0.097	0.048	0.033	0.174	0.087	0.078	-0.057	0.072	-0.046	-0.076	-0.002	0.111	0.087	0.027

Correlation matrix of multiple regression variables (page 3)

	CN/ other title	Urban dummy	Rural dummy	Teaching dummy	Training area	Surgical ward	Male dummy	Y Study Leave	Yes studied N Rsch	Yes Library access	Yes - Ward circ of n. Rsch	Yes Ward a specia- lity	Nurs Times Recode	Nurs Std Recode	Prof. Nurse Recode	Other Journal recode	Yes taught rsch based topic	
Bed no.	0.022	0.57	-0.756	0.572	0.152	-0.078	0.033	0.083	-0.044	0.087	0.205	0.619	0.262	-0.062	-0.123	0.004	0.067	-0.082
Age	0.38	-0.06	0.192	-0.123	-0.086	-0.021	-0.026	0.126	-0.083	-0.012	0.052	-0.112	-0.018	-0.065	-0.039	-0.002	0.017	-0.072
Highest qualification	0.067	-0.02	-0.166	0.12	0.089	0.013	0.033	0.076	0.257	0.056	0.064	0.056	0.059	0.073	-0.042	0.234	0.298	0.164
Time qualified	0.464	-0.08	0.158	-0.107	-0.075	0.007	-0.077	0.14	-0.087	-0.059	0.032	0.166	-0.125	-0.088	-0.088	0.071	0.086	-0.075
Clinical Grade	0.791	-0.061	-0.061	0.051	-0.065	0.005	0.04	0.207	0.025	-0.029	0.044	0.07	0.012	-0.001	0.113	0.235	0.053	
Time in current ward	0.193	-0.145	0.156	-0.161	-0.051	0.029	-0.022	0.101	-0.098	0.006	0.034	0.183	-0.153	-0.058	-0.015	0.069	-0.056	-0.097
Job satisfaction	0.08	0.02	0.05	0.037	0.024	0.067	-0.136	0.183	0.034	0.096	0.15	0.13	0.015	-0.011	0.093	-0.043	0.041	0.048
Study days past 12 m	0.096	-0.118	-0.081	0.017	0.029	0.017	0.032	0.212	0.119	0.084	-0.02	-0.05	-0.044	0.043	0.052	0.082	0.179	0.033
28F	0.117	0.012	0.016	-0.005	-0.017	0.018	0.072	0.116	0.153	0.077	0.021	0.016	-0.006	0.011	-0.067	0.095	0.14	0.174
29B	0.01	-0.043	-0.004	-0.025	0.008	-0.016	-0.02	0.001	0.072	0.061	0.033	0.067	0.035	0.008	0.036	0.091	-0.034	0.025
29H	0.192	-0.05	-0.047	-0.003	0.039	0.081	0.009	0.134	0.073	0.058	0.101	0.145	0.061	0.028	0.092	0.03	0.064	0.108
29I	0.225	0.018	-0.069	0.083	0.101	0.072	-0.037	0.19	0.021	0.066	0.134	0.123	0.05	-0.014	0.042	0.031	0.081	0.174
29N	0.214	0.007	0.006	-0.003	0.021	0.111	-0.011	0.062	0.077	0.028	0.032	0.076	-0.026	0.005	0.009	-0.007	0.053	0.108
Factor 1	0.318	-0.083	0.099	-0.089	-0.044	-0.091	0.027	0.135	-0.047	-0.111	-0.17	-0.132	-0.093	0.001	0.029	-0.112	-0.127	-0.046
Factor 2	0.017	-0.048	0.039	-0.124	-0.017	-0.052	0.012	0.036	0.027	-0.038	0.102	-0.029	-0.052	0.006	0.031	0.002	0.017	-0.076
Factor 3	0.103	0.031	0.023	0.007	-0.02	0.024	0.02	0.104	-0.005	-0.037	0.091	-0.051	-0.044	0.02	-0.021	0.026	0.005	-0.002

Correlation matrix of multiple regression variables (page 4)

	CN/ other title	Urban dummy	Rural dummy	Teaching dummy	Training area	Surgical ward	Male dummy	Yes Study Leave	Yes studied N	Yes Library access	Yes - circ of	Yes Ward receives n.	Reg. read one journal	Yes Ward a specialty	Nurs. Times Std	Prof. Nurse Recode	Other Journal code	Yes taught rsch based topic	
<b>Factor 4</b>	0.045	0.026	-0.074	0.042	0.017	-0.022	-0.012	0.024	0.135	0.053	-0.035	-0.033	0.059	-0.002	0.048	-0.007	0.038	0.035	0.111
<b>Factor 5</b>	0.021	-0.11	0.015	-0.138	-0.023	-0.031	0.064	0.143	0.048	-0.069	-0.196	-0.142	-0.097	-0.064	-0.051	-0.001	0.028	-0.047	0.087
<b>Factor 6</b>	0.145	-0.112	0.051	-0.028	0.003	0.103	-0.076	0.196	0.094	0.091	0.02	0.142	-0.036	-0.101	0.054	0.122	0.058	0.085	0.027
<b>CN/ other title</b>	1	-0.015	-0.007	0.018	-0.05	0.007	-0.045	0.17	0.009	0.021	-0.043	0.093	0.008	-0.007	-0.021	0.031	0.126	0.167	0.055
<b>Urban dummy</b>	0.015	1	-0.232	0.444	0.008	-0.043	-0.016	0.139	-0.008	0.054	-0.083	-0.147	0.364	0.229	-0.044	-0.047	-0.037	0.002	-0.037
<b>Rural dummy</b>	0.007	-0.232	1	-0.522	-0.166	0.082	-0.026	0.028	0.033	-0.046	0.253	0.313	-0.498	-0.273	0.089	0.045	0.004	-0.081	0.028
<b>Teaching dummy</b>	0.018	0.444	-0.522	1	0.111	-0.007	-0.029	0.046	-0.057	0.073	-0.17	-0.202	0.376	0.184	-0.031	-0.12	0.012	0.088	-0.036
<b>Training area</b>	-0.05	0.008	-0.166	0.111	1	-0.021	-0.006	0.065	-0.007	0.122	0.035	-0.092	0.066	-0.093	0.029	0.001	0.115	0.21	0.006
<b>Surgical ward</b>	0.007	-0.043	0.082	-0.007	-0.021	1	-0.089	0.047	-0.007	0.02	0.055	0.151	-0.017	-0.044	0.041	-0.025	-0.013	0.131	-0.032
<b>male dummy</b>	0.045	-0.016	-0.026	-0.029	-0.006	-0.089	1	0.077	0.09	0.04	-0.03	-0.087	-0.002	-0.025	-0.046	-0.024	0.03	0.014	0.018
<b>Y Study leave</b>	0.17	-0.139	0.028	-0.046	-0.065	0.047	0.077	1	0.089	0.157	0.073	0.107	-0.113	-0.022	0.058	0.012	0.06	0.123	-0.002
<b>Yes studied N Research</b>	0.009	-0.008	0.033	-0.057	-0.007	-0.007	0.09	0.089	1	0.103	0.051	-0.008	-0.088	-0.071	0.012	0.084	0.107	0.197	0.219
<b>Yes Library access</b>	0.021	0.054	-0.046	0.073	0.122	0.02	0.04	0.157	0.103	1	0.016	0.115	0.056	0.045	-0.018	0.006	0.078	0.046	0.044
<b>Yes-circ of rsch</b>	0.043	-0.083	0.253	-0.17	0.035	0.055	-0.03	0.073	0.051	0.016	1	0.283	-0.102	-0.024	0.021	-0.053	0.054	0.005	0.038
<b>Yes ward receives n.journals</b>	0.093	-0.147	0.313	-0.202	-0.092	0.151	-0.087	0.107	-0.008	0.115	0.283	1	-0.21	-0.076	-0.061	0.019	0.122	0.075	0.04

Correlation matrix of multiple regression variables (page 5)

	CN/ other title	Urban dummy	Rural dummy	Teaching dummy	Training area	Surgical ward	Male dummy	Y Study	Yes studied	Yes Library access	Yes - circ of resech	Yes - Ward receives n. journals	Yes Reg. read one journal	Yes Ward a specia- lity	Nurs Times Recode	Nursing Standard Recode	Prof. Nurse Recode	Other Journal Recode	Yes taught rsch based topic
Regularly read one journal	0.008	0.364	-0.498	0.376	0.066	-0.017	-0.002	0.113	-0.088	0.056	-0.102	-0.21	1	0.171	-0.069	-0.043	-0.076	0.035	-0.043
Yes-Ward a speciality	-	0.229	-0.273	0.184	-0.093	-0.044	-0.025	0.022	-0.071	0.045	-0.024	-0.076	0.171	1	-0.013	-0.045	0.012	0.124	0.049
Nursing Times Recode	-	-0.044	0.089	-0.031	0.029	0.041	-0.046	0.058	0.012	-0.018	0.021	-0.061	-0.069	-0.013	1	0.034	0.032	-0.013	0.059
Nursing Standard Recode	0.031	-0.047	0.045	-0.12	0.001	-0.025	-0.024	0.012	0.084	0.006	-0.053	0.019	-0.043	-0.045	0.034	1	0.012	-0.063	0.047
Professional Nurse Recode	0.126	-0.037	0.004	0.012	0.115	-0.013	0.03	0.06	0.107	0.078	0.054	0.122	-0.076	0.012	0.032	0.012	1	0.194	0.151
Other journal recode	0.167	0.002	-0.081	0.088	0.52E-21	0.131	0.014	0.123	0.197	0.046	0.005	0.075	0.035	0.124	-0.013	-0.063	0.194	1	0.128
Yes -taught rsch based topic	0.055	-0.037	0.028	-0.036	0.006	-0.032	0.018	0.002	0.219	0.044	0.038	-4.46E-04	-0.043	0.049	0.059	0.047	0.151	0.128	1



## APPENDIX 17

### Step-wise multiple regression analysis variables

#### Variables entered in to stepwise multiple regression analysis

Variable	n
Bed no.	680
Age group	678
Highest qualification	679
Length of time qualified	677
Clinical grade	680
Length of time on current ward	680
Job satisfaction	674
No. of study days	652
28f. It is difficult to know what the implications for practice are.	658
29b. The medical staff are not supportive in working with us to introduce changes in nursing practice.	656
29h. There is no time to look at and / or implement new ideas.	663
29i. I feel constrained by the hierarchy in making changes in practice.	659
29n. Changes in practice are driven by senior managers.	661
Factor 1. Autonomous professional practice	650
Factor 2. Research is easy to read and relevant	654
Factor 3. Multi-disciplinary co-operation	661
Factor 4. Information overload	652
Factor 5. Leadership	650
Factor 6. Barriers to implementing change	661



**Dummy variables entered in to step-wise multiple regression analysis**

<b>Dummy Variables</b>	<b>Categories</b>	<b>n</b>
Hospital location	Rural	680
Hospital location	Urban	680
Hospital type	Teaching	680
Title (CN/other)	CN	680
Ward type	Surgical	673
Whether ward a speciality	Yes	615
Whether ward a training area	Yes	674
Gender	Male	680
Availability of study leave	Yes	676
Whether studied nursing research	Yes	665
Topic taught based on nursing research	Yes	568
Library access	Yes	663
Circulation of research summaries	Yes	652
Whether ward gets journals	Yes	662
Read Nursing Times	Regularly/occasionally	680
Read Nursing Standard	Regularly/occasionally	680
Read Professional nurse	Regularly/occasionally	680
Read Other journal	Regularly/occasionally	680
Read at least one journal	Regularly	680

**Variables with large amounts of missing values (>60) recoded to be included in multiple regression analysis.**

Variable	n	categories	distribution
Whether ward a speciality	615	Yes No	400 (65%) 215 (35%)
Topic taught based on nursing research	568	Yes No /Don't know/ Missing	211 (37.1%)
N Times	594	Read Don't read/missing	584 (85.9%) 96( 41.1%)
N Standard	502	Read Don't read/missing	463 (68.1%) 217 (31.9%)
Professional nurse	419	Read Don't read/missing	338 (49.7%) 342 (50.3%)
Other journal	137	Read Don't read/missing	103(15.1%) 577 (84.9%)

**Variables omitted due to large amounts of missing data (n>60)**

Variable (interval)	n	mean	SD
WTE/bed	514	1.36	0.38
1st level/bed	514	0.77	0.21
Trained as %	514	67.82%	10.36
Trained/bed	514	0.92	0.25
1st level RNs as % of total	514	57.54%	10.12
Hrs spent studying on duty	503	2.97	5
Hrs spent studying off duty	580	8.1	10.31

Variable (category)	n	category	No. (%)
Read > one journal	324	Regularly Occasionally	120 (37%) 204 (63%)

**Variables omitted due to being highly correlated with other variables**

Large hospital dummy, Charge Nurse dummy, number of study days funded, occasionally read at least one journal, no-ward not a speciality, medical ward dummy, no-Study leave, no-Studied nursing research, no-library access, no-circulation of articles, no-ward gets journals.

**Variables omitted due to overlap with other variables and to reduce total number of variables**

Small hospital dummy; Enrolled Nurse, Staff Nurse, Clinical Nurse Specialist & Senior Nurse job title dummy variables.



## APPENDIX 18

### **Hospitals and nurses taking part in the interviews**

(Tables start over leaf).

Hospitals for Interview (Highest and lowest scoring small, medium and large hospitals)

Code No.	Bed no.	Raw hospital mean RUS	Hospital mean RUS to nurse level	Hospital mean RUS to ward level	Hospital Size	Hospital Location	Hospital Type	Response Rate	No responding/ no. sampled	No of high scoring nurses (>3.64)	No of low scoring nurses (<1.86)
314	560	2.98	2.94	2.94	Large	Sub-urban	Teaching	61.3%	19/31	3	0
202	280	2.97	2.93	2.93	Medium	Rural	Non teaching	84.4%	27/32	2	0
106	124	2.9	2.93	2.93	Small	Rural	Non teaching	80%	12/15	0	0
206*	415	2.81	2.90	2.74	Medium	Sub-urban	Teaching	73.5%	25/34	4	3
208	468	2.50	2.50	2.50	Medium	Sub-urban	Non teaching	78.4%	40/51	0	8
308	510	2.52	2.46	2.45	Large	Sub-urban	Non teaching	59.6%	28/47	0	5
103	69	2.43	2.41	2.40	Small	Rural	Non teaching	89.5%	17/19	1	3

\*This hospital has high and low scoring wards / individuals

## NURSES INTERVIEWED

Type of Hospital	Hosp. mean RUS to nurse level	Ward code & Type	Mean Ward RUS	Nurse type* & code no.	Nurse's mean RUS
Low scoring Small hospital (69 beds)	2.43	01 Surgical	2.47	CN 01	3.33
				RN 02	1.64
		03 Medical	2.16	RN 04	0.17
				RN 05	2.86
High scoring Small hospital (124 beds)	2.9	01 Surgical	3.04	RN 04	3.36
				RN 06	3.15
		02 Medical	2.81	RN 04	2.77
Low Scoring Medium hospital (468 beds)	2.50	01 Medical	2.27	RN 03	1.79
		08 Surgical	2.43	CN 01	3.29
				RN 03	2.57
Mixed Scoring Medium hospital (415 beds)	2.81	02 Surgical	3.24	CN 01	3.71
		04 Medical	3.03	CN 01	3.71
				RN 04	3.79
		05 Medical	1.42	CN 01	1.31
High Scoring Medium hospital (280 beds)	2.97	01 Surgical	3.15	CN 01	3.64
				RN 02	3.14
		02 Surgical	3.14	CN 01	3.21
				RN 04	3.21
Low Scoring Large Hospital (510 beds)	2.52	04 Surgical	1.43	CN 01	2.43
		08 Medical	2.55	RN 06	2.50
High Scoring Large Hospital (560 beds)	2.98	03 Medical	3.12	RN 02	3.57
				RN 05	2.79
		05 Surgical	3.06	RN 05	3.71
				RN 06	2.64

\* CN = Charge Nurse, RN= Registered Nurse



## NURSES DECLINING TO BE INTERVIEWED

Type of Hospital	Hosp. mean RUS to nurse level	Ward code & Type	Mean Ward RUS	Nurse type* & code no.	Nurse's mean RUS
Low scoring Small hospital (69 beds)	2.43	NONE DECLINED			
High scoring Small hospital (124 beds)	2.9	01 Surgical	3.04	RN 08	3.38
		02 Medical	2.81	CN 01	2.21
				RN 02	3.36
RN 06	3.14				
Low Scoring Medium hospital (468 beds)	2.50	01 Medical	2.27	RN 02	1.69
		08 Surgical	2.43	RN 05	2.58
				RN 02	2.50
				RN 05	1.79
		05 Medical	2.48	RN 06	2.17
CN 01	2.31				
RN 05	1.79				
Mixed Scoring Medium hospital (415 beds)	2.81	05 Medical	1.42	RN 02	1.23
				RN 03	1.71
High Scoring Medium hospital (280 beds)	2.97	NONE DECLINED			
Low Scoring Large Hospital (510 beds)	2.52	04 Surgical	1.43	RN 04	1.29
		08 Medical	2.55	CN 01	3.00
				RN 05	2.00
High Scoring Large Hospital (560 beds)	2.98	03 Medical	3.12	CN 01	3.54
		05 Surgical	3.06	CN 01	2.50
				RN 02	2.86
				RN 03	2.86

\* CN = Charge Nurse, RN= Registered Nurse

## APPENDIX 19

### Interview schedule for Charge Nurses and Staff Nurses.

#### Introduction.

Thank you for agreeing to take part in this interview. The interview is to follow up on the findings of the questionnaire survey on research utilisation by nurses. From the interviews we hope to be able to understand more about the findings of the survey and to add explanation to some of the findings. It seemed important to come and ask the nurses who took part in the survey what their interpretations of the findings might be rather than only offer our own explanations.

All the answers given in the interview will remain confidential and will be reported anonymously. For instance, if quotes are used they would be attributed to 'a senior nurse' or 'a staff nurse' so that the respondent could not be identified.

A microphone and tape recorder will be used to record the interview. This is far easier than trying to take notes and also ensures that there is an accurate record of what has been said. Any references you may make to the name of a hospital or ward would have the name removed for any reporting of the data. Don't worry about talking into the microphone, it will pick up what we are saying from here.

The interview should last around 20-30 minutes.

#### ***High scoring nurse***

I wanted to seek your comments on the results of the survey on using nursing research as I am interested in finding out about how some nurses, like yourself, manage to use research findings quite extensively in practice.

I thought we could begin by talking about hospital policies and then discuss professional qualifications and reading habits. Then I planned to ask you about the ward, about working in a surgical/medical ward and what features of the ward that you think help most in getting research into practice.

#### ***Low scoring nurse***

I wanted to seek your comments on the results of the survey on using nursing research. I am interested in finding out about your experiences of the barriers to research utilisation which seem to cause difficulties for quite a number of nurses.

I thought we could begin by talking about hospital policies and then discuss professional qualifications and reading habits. Then I planned to ask you about the ward, about working in a surgical/medical ward and what barriers there might be to research utilisation in the ward itself.

#### ***Hospital organisation and structure variables (exc. ward type)***

1a. The survey showed that having a policy or a procedure for a nursing practice had little if any effect on whether the nurses used the practice<sup>1</sup>. Thinking about your own

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<sup>1</sup> There was significantly greater use of only two out of the 14 nursing practices when a written policy or procedure actually existed. One of these practices was on average the most well utilised of all the 14 practices and the other the least well utilised (see page 169-170).

experiences, why do you think this might be? (Give the example of moist wound healing if needed.)

1b. There was a stronger link between believing there to be a hospital policy and using the practice, regardless of whether a policy really existed or not. How do you think this could be explained?

### *Individual nurse variables*

2. With regard to qualifications, the survey showed that the higher the nurses' qualifications then the more likely the nurse was to have heard about nursing research findings and be using them in practice. Is this what you would expect? Why do you think this is?

3. Also, the survey showed that the higher the nurse's clinical grade then the more likely the nurse was to use research. Is this what you would expect? Can you suggest any explanations for this?

4. Moving on to talk about reading, how might you explain the finding that nurses who do more reading **off duty** are more likely to use research in practice?

What I am particularly interested is why the amount of reading done **off** duty rather than **on** duty is important?

5a. With regard to the nursing journals, the survey found that reading, in particular Professional Nurse was associated with being more aware of research and using it in practice more. Is this a journal you have come across?

If so, can you suggest any explanation why reading this journal as opposed to reading the Nursing Times or Nursing Standard would make such a difference?

If not - move to 5b.

5b. Nurses who read some of the other nursing journals such as the British Journal of Nursing or Surgical Nurse also tended to use of research more in practice. Can you say why this might be?

5c. When nurses had been taught about a topic from the basis of a research study and it's findings, they were more likely to know about and use research in general. Can you recall being taught in this way?

If so - Has it affected the way you find out about and use research in your work at all?

If not - Can you say how you think others may be affected by this?

Moving on to talk about the ward you are working in.....

6. In the survey, nurses working in the surgical wards tended to be able to use research in their practice more than nurses in the medical wards. Why do you think there might be such a difference between these two types of wards?

7a. In terms of how nurses felt about their work, those who felt that they were encouraged to think about patient care and ask questions were more aware of research and were using it in practice more. In contrast, those who did not feel they

had this sort of encouragement didn't manage to use research so much. Why do you think this might be ?

7b. How do you think this open, questioning type of environment is created ?

7c. There seemed to be an association with the feeling of having some authority - those that felt that they had authority to make decisions about patient care were able to use research more. Do you think this is important? Can you say a little more about why this might be?

7d. In wards where the care was thought to be less routinised and could be organised according to patients individual needs, the nurses were more likely to have heard about nursing research and be using it in practice. Can you offer any explanation for this?

7e. When the nurses felt that changes in the ward were driven by senior managers and not by the ward nurses, they were not able to use research as much in their practice? Why do you think this might be?

I'd like you to what it's like to work in **this** particular ward and hospital.

8a. Can you tell me what it is about **this ward** that helps you to find out about and use research in practice?

What about in the hospital as a whole - what is it about **this hospital** that helps the nurses to find out about and use research in practice? (Can you say why?)

8b. What would you say was a hinderance, what stops or blocks them finding out about and using research in the ward? And in the hospital? (Can you say why?)

9. Finally, what **for you** would you say is **the most important** in helping nurses to find out about research and use it in practice?

Can you explain why?

Thanks for co-operation.

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[ Prompt questions:

To return respondents to the question area and avoid discussion of variables not found to have a significant association in the questionnaire study -

"The survey didn't seem to indicate any association with ..... Can you think of any other explanations for.....? "

To encourage response when unable to give an interpretation or explain an issue -

"Can you think of any examples of this from your own practice ?" ]



## APPENDIX 20

### Interview schedule for Directors of Nursing

#### Introduction.

Thank you for agreeing to take part in this interview. The interview is to follow up on the findings of the questionnaire survey on research utilisation by nurses. From the interviews we hope to be able to understand more about the findings of the survey and perhaps explain some of findings. It seemed important to come and ask the nurses who took part in the survey what their interpretations of the findings might be rather than only offer our own explanations.

All the answers given in the interview will remain confidential and will be reported anonymously. For instance if quotes are used they would be attributed to 'a senior nurse' or 'a staff nurse' so that the respondent could not be identified.

A microphone and tape recorder will be used to record the interview. This is far easier than trying to take notes and also ensures that there is an accurate record of what has been said. Any references you may make to the name of a hospital or ward would have the name removed for any reporting of the data. Don't worry about talking into the microphone, it will pick up what we are saying from here.

The interview should last around 20-30 minutes.

#### ***High scoring hospital***

I wanted to seek your comments on the results of the survey on using nursing research as I am interested in finding out about how in some hospitals, like yours, the nurses manage to use research findings quite extensively in practice.

#### ***Low scoring hospital***

I wanted to ask seek your comments on the results of the survey on using nursing research as I am interested in finding out about the barriers to research utilisation, that seem to exist in some hospitals.

I thought we could begin by talking about some features of the hospital itself such as size and the use of policies and procedures. Then I wanted to ask you about availability of resources for nursing and discuss issues such as skill mix and the development of staff.

#### ***Hospital organisation and structure variables (incl. ward type)***

1. In the survey, it emerged that in general, the smaller the hospital the more likely the nurses are to know about and use research in their practice. Can you say why this might be?

2. It was also clear that nurses working in the surgical wards tended to be able to use research in their practice more than nurses in the medical wards. Why do you think there might be such a difference?



3a. The survey showed that having a policy or a procedure for a nursing practice had little if any effect on whether the nurses used the practice<sup>1</sup>. (Give the example of moist wound healing if needed.) Can you suggest why this might be?

3b. There was a stronger link between the nurses believing there to be a hospital policy and using the practice, regardless of whether a policy really existed or not. How do you think this could be explained?

4b. Moving on to consider nursing skill mix. The survey showed that in hospitals with a higher proportion of trained staff as opposed to untrained, the nurses tended to know more about research and were able to put the findings into practice more. I'd be interested on your comments on this ?

4b. Thinking a bit more about staffing levels, and particularly levels of trained staff. It seemed to be that in hospitals which employed more **trained** nurses per hospital bed, again the nurses tended to use more research in practice. Simply having more of all types of nurses - trained and untrained per bed did not have any affect. Can you make any (further) comment on this ?

### ***Individual nurse level***

5a. Moving on to think about the resources you have available for nursing and how these might contribute to helping nurses to learn about and use research. What sort of study leave do you try and provide support for ? What sort of priority are you able to give to the funding of study leave ?

5b. Can you tell me briefly about your current aims and any other strategies you have for developing nursing at the moment which might also help nurses to learn about and use research? What would you say are the current priorities ?

6a. I'd like you to think about working in **this** particular hospital. Can you tell me what you think helps nurses in **this hospital** to find out about and use research in practice ? (Can you say why ?)

6b. What would you say was a hinderance, what stops or blocks them finding out about and using research ? (Can you say why ?)

7. Finally, what **for you** would you say is **the most important** in helping nurses to find out about research and use it in practice ? Can you say why ?

Thanks for co-operation.

### *[ Prompt questions:*

To return respondents to the question area and avoid discussion of variables not found to have a significant association in the questionnaire study - "The survey didn't seem to indicate any association with ..... Can you think of any other explanations for.....? "To encourage response when unable to give an interpretation or explain an issue - "Can you think of any examples of this from your own practice ?"]

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<sup>1</sup> There was significantly greater use of only two out of the 14 nursing practices when a written policy or procedure actually existed. One of thee practices was on average the most well utilized of all the 14 practices and the other the least well utilized (see page 169-170).

## APPENDIX 21

### Transcription of Director of Nursing interview

*I wanted to seek your comments on the results of the survey on using nursing research as I am interested in finding out about how in some hospitals like yours, nurses manage to use research findings quite extensively in their practice. First of all I thought it would be useful to find out what sort of activities you consider to be nursing research in your hospital and if you can think of any examples.*

Yes, I suffer from a purist approach to life which gets me into hot water quite a lot and I do see research as obviously being investigating and identifying best clinical practice. I think in that respect, I would be very hard pushed to say, apart for example for some of the drug trials, for some of the trials in perhaps ophthalmology where they seem to do a little bit more of that kind of research in clinical practice than in many other places. It still tends to be rather medical dominated and any of the research that is going on, is apart from some of the multi-site trials for example, hip fracture, well it's still audit in that respect. So I try to differentiate between research and audit, and in terms of audit there is a tremendous amount going on, so much so, that we have books full of pages that describe the different audits, and I can pull that together for you, and I can tell you about some of it. In terms of what I would regard as the purist research, very little, medically dominated and perhaps a contribution to some research projects that are going on, rather than actually leading to projects specifically here.

Now we suffer a little bit sometimes from being that little bit out of (the city), particularly the University because people tend to go as far as the (hospital in the city) and not very much further. Terribly handy of course. We are very keen. In fact I was trying to get something together with (another University) because it's just as easy sometimes for them to, but that didn't work. I was reading yesterday about risk management because I'm responsible for risk management too, and there is a head of department, I think at (the other University), who wrote this article, and I was thinking perhaps I need to get in touch with him to see if there is one of his students who would like to work with us in relation to risk management. I've always got ideas, but the actual practicalities of getting things in place have been very slow because of many other priorities.

If you look at the audit though, there are tremendous numbers of audits going on. Some are uni-professional, nursing, PAMS, but we do try to encourage the more collaborative stuff and that is happening. For example, speech therapists and nurses working together, occupational therapists and nurses working together, and even doctors and nurses working together. So there is a bit more of that and a lot going on, and I think as we were discussing yesterday at a study day, I think there is a lot going on.

We are still not entirely convinced it is all put into practice, and I think a lot work needs to happen in terms of the implementation, and that's presumably exactly what you're talking about in this research project which is to do with - Is it put into practice? What makes it happen? What stops it happening? Are we just going to be

depending upon people's ability to take something and run with it? Do people like me have a much more important part, a more pro-active part in terms of making it happen and indeed is there a slightly more punitive sense that if you don't do it the purchasers will penalise us financially for not doing something? So it's a question of what you do with it in the fullness of time. Does that answer the question more or less?

*Yes. I thought we might talk about some features of the hospital itself, such as size and the use of policies and procedures. Then I wanted to ask you about the availability of resources for nursing, and discuss issues such as staffing levels and development of staff. In the survey, it emerged that in general, the smaller the hospital the more likely the nurses are to know about and use research in their practice. Can you say why you think this might be?*

I was surprised at that. The reason I was surprised was our examples here, and our small hospitals here are really both, cause there's really only two nowadays. Our small hospitals are long stay, care of elderly and they tend to be staffed with people who have been there a very long time. There is very little turn over obviously, and the result is that people tend to be less unsure about their practice. I'm not saying it's right or wrong, just saying they are sure about it. For the most part, indeed I was just reading a local health council visit to the place, one of them and their comments, and really they are very impressed, and the point about that is obviously care that's being given is meeting that particular need to a level of quality that certainly people like the local health council appear to find acceptable. But generally speaking, if I were to go to our care of the elderly hospitals and ask about research practice now. Did you go to the small hospitals here? No because it was hospitals just with general medical and general surgical wards. So that wouldn't be the case, but of course with it being the kind of hospitals you then talked about which might be the Highland/Island kind of hospital where they do have it, presumably their view is, that they need to be even more up-to-date, because they feel fairly isolated. Perhaps they read more. Perhaps they have the opportunity to explore things more. They probably just have a different attitude, whereas if you worked at the centre of arrogance as we like to call it, maybe there is a bit of a, literally a bit of an arrogance about it. Because you think you are in the centre of it, it will just suddenly be learning by osmosis, which is true up to a point isn't it because it does happen to a certain degree. So perhaps because they think that they might be isolated perhaps they make more of an effort.

*It was also clear that nurses working in surgical wards tended to use research in practice more than nurses in medical wards. Why do you think there might be this difference?*

The only thing I could think of when I began to think about it a bit more was, again in surgical wards there do tend to be, although not necessarily items that you were particularly looking at, but there do tend to be a greater variety of different specialities, and there do tend to be - it's a younger age group, it's a more dynamic kind of specialities that they tend to be for example, clinical practice in relation to minimal access surgery. In relation to those sorts of areas, and I think perhaps its just a matter of they recognise that things move on perhaps a little bit quicker in medical care, although I don't think it is actually true, but there is this tendency to think of it

as being less developing areas of practice and I don't know that that's true, and indeed what's more I think nurses can effect it much more than perhaps they can in surgical. So that's the only thing I can think of. I was again surprised to hear that, and that is a really important message to get across, because as I said, it would allow me the opportunity certainly to go back to medical and say, 'Well is there something we can be doing a bit more productively in relation to changing practice?' So I don't know is the answer. I'll be very interested to hear what people think. I couldn't think of obviously of something that was an answer to that.

*The survey also showed that having a policy or a procedure for a nursing practice had little if any effect on whether the nurses used the practice. Can you suggest why you think this might be?*

I think there is a wariness about policies and procedures. First of all they did used to gather dust. They reflected what happened usually at least 5 years ago, and therefore if they are not going to be addressed in a more dynamic way, in other words, addressed and readdressed, and adjusted accordingly, hopefully as a result of audit, but certainly adjusted accordingly to changing practice, they won't mean anything. One of the things, in fact two things have changed recently that I think will effect that, one is risk management and there is no doubt at all and I would add, protocols are interesting now as well, and I think this whole business of policies, procedures and protocols is an issue that needs to be addressed, going to have to be addressed locally, but there is a difference to all of those things, and I think it is important for us to differentiate, and I think policies are not what you need for clinical practice. Policies are what you need for employment legislation, for organisational management, for paying the bills, not paying the bills and patients funds possibly, and those sorts of things that have either a statutory aspect or a trust wide or a having to justify your actions kind of situation, employer professional policy might be appropriate.

Protocols are to do with, I think, this multi-disciplinary approach to how you deal with a particular condition or a particular situation. We have for example protocols for dealing with different conditions. This is the one we have for obstetrics and paediatrics. We have them also for gastro-intestinal work. We have other ones that are being drawn up and what they are associated with. Those ones particularly, are minimising or preventing risk situations, accidents, and obstetric emergencies. It's how to deal with them. The idea is that they are available within the wards. The midwives (but mainly the junior doctors quite frankly) read them on their opportunities to read, and then when it happens, they know what to do with it. They are laminated so they can actually be in the labour ward and various things like that, and they have proved. We've audited them before actually, after the pilot, and it came out that they actually were used, and they were found to be extremely useful.

So that is what I would call a protocol. This is a slightly different kind of protocol which is almost getting to the idea of what I think you were meaning about, by policies and procedures, whereby it's a much more how you treat dyspepsia, peptic ulcer disease and the idea is that this can be used perhaps in different areas, A and E but GP's surgeries for example, so that people know exactly what it is that they are being expected to do. It's very multi-professional. It certainly isn't by any manner of



means medical but it was drawn up with the medical people, so they have been very much involved in that. This I think I can see more of, and this is going to be very useful and our clinical care pathways for example, looking at multi-disciplinary approach to the whole treatment of condition will have great spin offs in those respects.

Hopefully final draft of procedures, which is to do with handling patients. All these nursing procedures, catheterisations and all sorts of things like that. They have all just been up-dated in a particular format and that's about to go out once we have just checked it over, but it takes such a long time to do that. We've got to find a better way to do that so, perhaps as I'm talking, I'm thinking there are different levels to these things and it's just making sure that people have all the information at the right level, so the policies if they gather dust, it isn't the end of the world, because as long as people know where they are and can check them when the need them.

Protocols are much more apparent documents and certainly procedures are required to be available, much more accessibility. We do research. We do try to make sure that things are addressed at the different levels that are useful. They are only as good as the success of them when they are needed and that we do try and audit that. We certainly pilot things before they go out. Like everything else, when priorities change they get down the list a little bit so we have to constantly be addressing them. As I say it took us a year to do the procedures, so that's just not acceptable. We've got to find a better way to do that.

*You started talking about accessibility and making them available to nurses because what we did find was that there was a stronger link between nurses believing there to be a hospital policy or a procedure and using the practice, and that was actually regardless of whether a policy really did exist or not. In view of what you've just said how do you think this might be explained?*

Lack of education I suppose, because whenever you introduce something you just have to make sure that everybody is signed up to it, and everybody understands it, and everybody knows where to get it, and all that sort of thing. I don't know. Frankly, I think just human nature possibly a little bit too. There had always been this view that there will be a policy somewhere but it won't be relevant, it won't be appropriate. I won't even bother looking for it, but I'm sure it's got something in it and sometime I'll maybe have time to do it really. I think no more than that actually.

*In the questionnaire you said that summaries or titles have recently published research articles and circulated the wards. I was wondering how the summaries or titles are chosen. Who is involved in choosing them?*

I think as I indicated it tends to be very much a filtering process. As I go through, I get journals every month or week or whatever it happens to be, and I will go through it with a fine tooth comb and I will pick out particular articles. Probably copy the whole article which will give further information, and obviously references and so on and so forth, and I will send it to particular people, but at this stage I wouldn't have been sending it very far. In other words to the directorate nurses, for example the nurse managers. There would only be 6 of them so that makes it fairly controllable.

Then it's up to them what they tend to do with it and I would imagine there is another filtering process. Jim Miller obviously gets the same sort of things. We tend to get the same kind, but there is some stuff that he might circulate individually. In terms of risk management in particular I tend to send to anybody I think happens to need it, but whether that is a director or consultant or a Pans head of department or an operations person. So that's much wider circulation than for example just the nursing documentation. But it does tend to be articles. I've occasionally sent for things. I still have some stuff on sleep and sleep patterns and that went quite far. That was circulated quite widely. That is I think as far as we would go at the moment.

I've been looking at the business plan for nursing and quality, and quite clearly I've been looking to how we take our research and development strategy forward. So I think the stuff from that will be very helpful to the likes of me to try to make sure that we are directing it in the most appropriate fashion. We have to recognise we cannot do everything for everybody, and whereas research, and nursing research particularly is top of my agenda between 9 and 10 today, chances are that by tomorrow, when we've got to talk about pain, about something else, so I have to make sure that it happens no matter what my priorities are, and that's the trick and that's sometimes quite difficult, because as you said ,if it's people who are enthusiastic and interested and depends upon them doing it then that can't work. It's got to be something that allows it to happen whether they are there or not, and I think that is where this work will be very helpful. It will identify what areas are the areas that need to be perhaps addresses and enthused to do it themselves, although I did also take from the study there are a lot who are very enthusiastic who do read it, who do put it into practice and that is what you need. You don't need people to do the research you need them to pay attention to it, so very much up to me and it's a filtering process.

*Moving on to consider levels of trained staff. The survey showed that in hospitals with a higher proportion of trained nurses as opposed to untrained, the nurses tended to know more about research and were able to put their findings into practice more. I'd be interested in your comments on this.*

It would be true and I was most encouraged to hear that, 'cause if that wasn't the case we would all be in a big problem. Did you find that between the hospitals there was quite a difference between trained and untrained?

*Yes there was quite a variety.*

And was there something that people could put their finger on?

*No we haven't really looked any further than looking at the actual numbers.*

Because of course you know this whole bench-marking exercise that's being implemented in a number of areas but certainly they are about to do it in Lothian and looking quite specifically at nursing as much as anything else. There is always a reason I think for there being such a difference, and I'm very chary about saying there should be a particular ratio in a particular ward given that the layout and any number of things are relevant. However, it was just a passing thought. I wondered if there



was something you put your finger on. I'm glad that's the case and that is exactly what you would want to see, and one of the best arguments for actually having a more sensible division of trained and untrained. That really you cannot continue to deskill and expect to keep a level of understanding and practice that you want to maintain. You cannot have it both ways. If you want to do that, that's fine. If you want to save money by putting auxiliaries in, well it certainly isn't fine. but it has an effect and you can actually ensure that.

*Thinking a bit more about staffing levels and again levels of trained staff, it seemed to be that in hospitals which employed more trained nurses per hospital bed, again the nurses tended to use more research in practice. Simply having more of all types of nurses trained and untrained per bed didn't make any difference. Have you got any further comments on that?*

No, but had you been able to ask questions about students? Because I still believe that students presence on a ward makes a huge difference, and they, depending on what kind of students, and I think that too does make a difference, but still, even all students, to have students on a ward, brings the level of enquiry, and hopefully putting research into practice, much greater. I've been very worried about the reduction in nursing students. All the academic wonderful arguments besides. The effect on wards is perhaps I think they haven't been questioned, and thus questioning, quite to the same degree. However, I would imagine too, that with the new students coming off stream as they will now, that will make a huge difference too because they are much more questioning practice and that kind of situation orientated, so I think that will be good. It must be possibly related to their having time perhaps, to spend either talking about research issues, or looking, or reading, or whatever it happens to be, because so much of that has to be off work time. But I think perhaps, and of course bouncing ideas. There's no doubt at all, that if you have nobody to bounce ideas against you tend not to bother. So I've found it. The two heads are better than one thing certainly holds true in relation to that. Sort of say something and think that sounds really stupid, whereas if you don't have the chance to say it then you don't.

We so have information for each ward on whether they take students or not, but we haven't looked at it in relation to this yet. The effect this year would have been seen, because I do worry about that, because there's no doubt having students about makes a huge difference. Huge difference.

*That has come out in some of the things people have said. Moving on to think about the resources available to you and how these might contribute to helping nurses learn about research, and using research in practice, what sort of study leave do you try to and provide support for?*

Could I just say to make one point I feel very strongly about? You've clearly chosen the right word which is resources. Generally speaking there isn't a problem with funding, because CSO have funding for large and small projects. University (not much of course) does facilitate aspects of funding, and indeed, even within the hospital itself and the trust, there is some monies. But time is the thing itself that is the most difficult thing. To release people is getting more and more difficult. Now

many people do things in their own time, but to replace staff is extremely expensive, and whereas you used to have enough leeway to allow them to go and not replace them, things are so tight nowadays you have to replace them. The replacement costs are extremely expensive, so I'm encouraging people not just to work out their finance for the next year in terms of fees and travel expenses (which we now actually don't give unless it is over 50 miles away), it's a question of having to calculate replacement costs too, because we just can't carry on meeting needs of patients and also allow people away. So perhaps it's not so wise to call it perhaps study leave.

We have reviewed the skill mix recently and a 20% allowance was tried to be estimated. Now we didn't succeed everywhere. 13.5% of that is holidays, 3% of that is reckoned to be education time, which sort of only leaves 3.5% for sickness, and maternity leave and everything else besides. Now sickness rates run about 9% in some places, not everywhere. Most places manage to get it down to about 4 or 5%, but you can see where this is just not going to work out. We're jolly lucky to get 20% and certainly there won't be any more, so there is a bit of a dilemma here. Holidays before you start is 13.5% and then the rest is to do with illness. There has been an attempt to look at it on a 3% point of view. That would be 3% of all staff, and as we all know, very few nursing auxiliaries get anything at all, so that increases it slightly to the trained staff, but that's the kind of assumed percentage of time for. Then you have on top of that, but then if they have to be replaced which they often do, particularly if their rates are anywhere near 6%, which most of them are. So we've got replacement costs and things like that and that's proving extremely difficult.

What we have though, we have several funds in this trust. One is there is something like £90,000 which we had desegregated from the board to do all the PSI and PSII's and the short courses. There was previously a view that we had to use it in the college. We guaranteed this current year that's going on now that we would give them 80% of that. So 80% of it is within the college, but that leaves us free to do things with the other 20% so that means we can go elsewhere with that. There is also, and I had an £11,00 budget for health care support workers, and since I have never been entirely convinced that that is the best way to proceed in terms of skill mix, and the people who have been able to do it have done it and as I said earlier we don't have a huge turnover here. That was added on to that, so in fact our study leave for nursing, professional nursing, was actually nearer £100,00 which was very good.

Now on top of that I had hoped last year to put about £6,000 per directorate, which was about £42,000. That didn't happen. We just couldn't afford it last year. I also had had in the past, £92,000 for replacement money which didn't happen, and there was supposed to be a nominal £30,000 for what we call the in house stuff, which is statutory stuff like fire, manual handling and all these sort of things. That sort of is there, but it's never been quite specifically identified. So we're talking really just about this £100,000, and if you divide that out between everybody it comes to something like £25/trained person and of course that's not a lot. So you know that's the kind of situation we're talking about. Does that answer your question?

*Yes it does actually. I was actually going to ask you about priorities. What priority you were able to give to funding.*

I have to keep funding very much in my budget, otherwise it disappears. Now this lot, this £100,000 is my budget, will remain my budget and gets just fed in from time to time. The in house stuff, and the £42,000 were it still there, would be at directorate, and I have great worries about that, because, if it's at directorate it's on a training and education line . There's only one line and anybody can access it. Well that's not acceptable, so I've made provision this year for that to be reversed. I'm going to take that money back out again. I've got to protect it. I really don't care. They can do what they like with it. I'm not going to muscle in on what they do with it, it's just got to be under nursing control otherwise it'll be lost. You wouldn't see medical staff making that mistake.

*Can you tell me briefly about your current aims and any strategies that you have for developing nursing at the moment which might also help nurses to learn about and use research?*

I think I do have it, although I have to say, I'm very lucky you know, because in many ways I'm lucky to be involved. Perhaps you've, perhaps heard of the National Nursing, Midwifery & Health Visiting Committee the National one, and it produces a lot of these documents, and this is the latest, well one of the latest ones. Well I'm (a member) of that, which is very helpful, because I get a lot of information about things that might be coming up or things that are developing, which is very good, very good indeed, and if it allows me to be maybe a couple of jumps ahead I'm quite happy. This is awful but we did draw up a strategy for nursing within (the Trust), but it was in August 1994 but really has been used as a basis for this year. Now it isn't very good, so I will apologise before I show it to you, but the point is that we at least had a strategy, and we are drawing up one for the business plan for this year. I don't like the bit at the beginning at all, which is to do with nursing and the philosophy and vision, and I will take that out, apart when they ask people don't like it, but someone put a lot of time and effort into it so that's fine.

However, I think the point to answer your question, she eventually gets round to it is, education is quite clearly identified with for example, the education requirements for all nurses within the trust are fully met, and then subsets - programmes of education are developed and accessed to meet the needs of nurses and of patients and clients. Clinical practice is of expansion of the scope of professional practice will continue to be identified and patient needs met. Every patient and client will have a named nurse. Concept of clinical supervision will be introduced, which of course was the case at that time, and that's all within professional and education.

Research and development - a nursing research core group will be set up with their representative from each of the directorate. The actual top line objective is, nurses are encouraged to relate current research to their clinical practice in order to improve patient care, but I am bound to say, this is one of the ones that was not followed through. Hadn't yet, but I'm encouraged, because we've still got time before the end of the year. Nurses will be encouraged to carry out nursing audit for their areas of clinical practice, and to take part in clinical audit. And then one or two management ones, and then that was just the people who were involved in drawing that up.



Now it's not current. There are bits of it I would do again happily. It is going to be updated, but the whole point about that is, that we have looked at these particular areas, and we will update it for this year. Certainly the research and development strategy for the trust is part of our objectives for this current year for introduction from April, but to be honest, we've really only just begun to sit down and think about what we're talking about, and one of the biggest things is awareness, which in itself, I think is a big area, and if we are going to be part of the risk management kind of loop as it were, we need to identify where we are at the moment, what's being done and then identify the options to find the strategy. But one of the parts of that, and the whole plank and the underpinning bit of that whole strategy as far as I'm concerned, as indeed with education is, and I've put the case every year now for the last 3 years is, we need somebody employed to look at education and research. And we've thought about different ways, talking about research and development and nursing practice also. We don't really want it to be that, because I think we are shying away from the totally uni-professional approach to life, because I see nurses as being perfectly capable of encompassing other areas of practice whilst still being responsible for developing nursing. 'Cause I believe so much for example, some of the PAMS could perfectly adequately share some of their work load without giving away nursing. I mean caring is not exclusively a nursing, I think, issue, but never the less, so we would want somebody. We would clearly want it to be a nurse, because that's where it's starting off from, but that half the time should be involved with education leading through educational aspects of practice, and the other half not perhaps initially, but certainly developing research. So that's what I see that person has been doing, and I'm putting a case in for that, but I don't know whether it will come off.

*Is that one of your priorities? I was going to ask you what you're priorities are.*

One of my biggest priorities, but I mean if that's going to be useful to you, but please don't regard it as anything other than as a piece of paper that was our first effort, but it does actually address the different nursing priorities.

*That's what we're looking to find out in nursing. I'd like you to think about working in this particular hospital. If you could tell me what you think helps nurses in this hospital to find out about and use research.*

Well we do have the college here which is quite helpful and I think there is informal enquiry as much as formal enquiry, in fact there is very little formal. It's probably more informal than anything else, but that helps, and there is a very good library and excellent librarians, and as you know librarians just love to be asked questions. You just see them foaming at the mouth. They love it, just love it which is thank goodness. There is quite a bit of that.

We also have an excellent... our department apart from anything else is very good. If people ask us questions about various things then we are very keen to try and find out for them. I don't tend to do that as I don't have a lot of time to do that, but Jim and indeed John our audit, clinical audit facilitator just love going away and getting information for them. We can do that. So there's an increasingly knowledgeable department here that can provide resources, so that certainly is part of it. So the

college being here, good library, or own gradually increasing facilities and also publications.

It sounds pretty trite, but there's no doubt at all that something can spark off just by reading the Nursing Times or Woman's Own that I've bought, but it's having. We do have a journal, not a club but a journal. We buy journals and circulate them so we do have an element of that, although again that budget keeps getting eaten away at, but we do have a strong budget for that.

We also have of course our secondments, which is a budget for allowing people to do whatever they want too do whether it's research or audit which we facilitate, and of course that spreads the word.

*What would you say was a hindrance? What might stop or block nurses from finding out about using research?*

Time. No other thing for it. I think that people used to say there's no money, although there was money, and indeed I think there is still money, and I think people can do it. I do think it's made quite difficult for people sometimes, and they get put off by perhaps having to go to a board and having their (if they're not doing a PhD or something) but they still have to justify the thing as if they were. People get put off by that, but never the less, there is money, and if you've got the enthusiasm, and you want to do this piece of research you can do it. In the wards there isn't time because they are all hard pushed anyway, whether they are doing extra hours, or on the bank or whatever else it happens to be. The very senior people who used to have time perhaps don't have anything now. I think that's the problem.

So people are going to have to think much more imaginatively about collaborative projects, and that's one of the ways I do see it going, which is why I would like to get somebody interested from, for example this education and research post that I'm talking about. I have always looked at the possibility of having two posts, one specifically education, but perhaps somebody from the college might like to think about doing, or even on a sessional basis, and the research part of it equally might be somebody who is very keen on research, not necessarily to do their bit of research but who can facilitate other people doing research, and looking at developing practice, and I think there'll have to be much more collaborative working, whereby the universities or whatever come to, and I talk about the real world, but very facetiously. They will have to come out and work with people rather than the other way round. I'm absolutely certain of that, but the one thing that will not change is what's going on in the Trust. It will only get more tight, more difficult financially, more difficult to release people, or more and more effort in order to take something off on your own bat as it were. Take even greater enthusiasm to do that, so I think that will have to change.

I think the colleges have recognised that a bit better than they used to be now for example, come out here in order to provide educational opportunities rather than us always having to go the centre. Things are moving, and I do know a lot of nurses do a lot of things in their own time in the evenings. We have evening classes for a number of issues, particularly, we do PSI on a part-time basis, and we also do things like our

bereavement and counselling in the evening, and things like that, because that's when people are able to do them. So these sorts of things have just got to be explored.

*Finally, thinking of everything that we've talked about. What for you would you say is most important in helping nurses to find out about research and use it in practice?*

I think facilitating. Working out some sort of a strategy that is to be accepted by the Trust that facilitates and actually helps people. We can't do it. This is our strong view in the Trust. There is no point in having directors around the place doing things, or big departments. That's why we are not keen, we have a very small department and quite deliberately. We are not keen on big departments. I can't do quality. I can't do the risk assessment and the implementation. I can't do that, but I can enable other people to do it, and they are the people who need to do it. They are on the wards. They are the people who will understand what needs to be addressed. They know perfectly well, but with them being so heads down as it were. So in order to be able to facilitate, and I truly believe in getting people out of their areas so they can actually concentrate, you can't, they have to be able to have time to think and be allowed to have time to think. Now quite frankly that's just pie in the sky on many occasions. If we can find ways in which to be able to facilitate that whilst doing everything that we're doing. So it's not a huge department that we're looking for. I'm absolutely against huge departments, but that's why we have a quality facilitator, a clinical audit facilitator and I would like to see an education and research facilitator. Not somebody to do it. Somebody to facilitate it and to allow and enable other people to do it, and even if you only get two or three to get two or three pieces of properly addressed research, I think will be excellent.

*I agree. That's lovely. Thanks.*