Chapter 1

Origin of the research questions

1.1 Chapter overview

Throughout the seven years of my candidature (1999–2006) my understanding of evidence-based practice (EBP) grew and changed. I recorded the various views I held throughout this period in a journal, to which I now turn in this first chapter to outline my own perspective on EBP. These reflections give the personal context in which this work was undertaken and are offered to explain how and why the research questions explored in this thesis were developed.

The development of my understanding of EBP is offered as an example of the many contextual and experiential factors that contribute to variation in New South Wales nurses' understanding of evidence for EBP. Having worked as a nurse, researcher and teacher in Australian healthcare for 25 years, I understand the context of nursing work and have taught both research methods and EBP for more than half this time. It was while teaching EBP to mainly post-registration nursing students that questions arose for me regarding the level of EBP knowledge nurses actually have. It was (and still is) my belief that building a foundation level of knowledge and skill in EBP is a basic requirement for introducing EBP to nursing, or to any of the health professions. Yet, my experience with post-registration nurses was that their level of preparation for engaging in evidence-based care was not only variable, it did not seem to equip them with an understanding of basic concepts on which to build strategies for

the use of research and other forms of evidence in their practice. This led me question what nurses were being taught about research and EBP, particularly at the undergraduate level. The logical follow-on was that if the problem was not only in *what* nurses were being taught, then maybe I also needed to question what was being taught *by whom*, and *when*.

My reflections in this chapter are open and honest, and are offered in support of developing EBP in nursing rather than as a criticism of what has gone before. In the broader context, the future of EBP will be determined as much by the social, cultural and political factors influencing Australian education and healthcare (as discussed in *Chapter 2*) as by individual contributions. Equally, the kinds of questions I have asked about EBP in this thesis are not unique to me, or to nursing. There are a number of healthcare disciplines providing services to patients or clients, and all face similar challenges in translating and implementing evidence for improving the delivery and outcomes of their care. However, to my knowledge, the research questions asked in this thesis have not been explored previously among Australian nurses. The overall aims of the thesis, the research questions and methods of three separate studies conducted with nurses in the state of New South Wales (NSW) are outlined at the conclusion of this chapter.

1.2 Understanding evidence

In Australia, undergraduate and graduate nursing education programs commenced in the tertiary sector in 1985. This was followed

by a period during which already registered nurses were encouraged to 'convert' their hospital-based training to a post-registration tertiary-level qualification. As a hospital-trained nurse myself, I was uncertain of the value of these bridging courses and elected instead to commence a psychology degree. I was surprised to discover an interest in statistics (which was a co-requisite subject), and completed a Bachelor of Arts, majoring in psychology and statistics. My interest in statistics and epidemiology later influenced my decision to undertake a Masters of Public Health and began my interest in EBP.

Studying clinical epidemiology during the Masters program in the early 1990s, it seemed to me that evidence-based medicine (EBM), like clinical epidemiology, was focussed on the critique of research method. One needed to determine whether the research itself was 'sound' before recommending implementation of the results into practice, and to determine 'soundness', it was necessary to critically examine the study design and statistics. I was prepared to accept that if the Australian National Health and Medical Research Council (NHMRC) decreed that a systematic review of all randomised controlled trials was the highest level of evidence (Level 1) for implementing the recommendations of research,[18] then nursing simply needed to do more randomised controlled trials to build an evidence-base. Systematic reviews, critically appraised topics, and other resources for evidence appraisal and transfer were in their infancy, and it was unusual to see their application within Australian nursing in the early and mid-1990s. But I had no doubt that it was possible to apply EBM to nursing practice.

I was fortunate to be working as a research nurse in a paediatric hospital at this time. The hospital had recently moved into a brand new facility, with a state-of-the-art library and modern computing facilities. Demand from colleagues saw those of us working in research increasingly being asked to teach it. We tried a number of different formats, each designed to help staff use the new facilities to access the growing amounts of evidence from research that was now available. Through participation in a number of collaborative projects, I had received an excellent grounding in basic clinical research[19-21] but my teaching at this time was limited to what I knew – introductory statistics and clinical epidemiology. My critique of study results rarely extended beyond methodological considerations. In 1996, Sackett and colleagues[22] had been prompted to write in defence of what EBM actually was and was not. I was confident I knew what it was. At this time, I understood evidence in the same way that I understood rigour in research: good research = good evidence. While this is not technically incorrect, my focus was on the quality of the research design and the strength of the evidence, rather than the outcomes of the research or their implications for patients and practice.

By the late 1990s I was managing a nursing and health services research group and lecturing at a nursing college. It was a project entitled *The Improving Patient Outcomes Project* which really brought the relationship between EBM and nursing to my attention. This project aimed to implement evidence-based guidelines into clinical nursing and midwifery practice and to measure improvement in patient outcomes following this intervention.[23-26] During the three

years in which I worked closely with medical and nursing clinicians at seven large NSW hospitals, I was left with the impression that while clinical nurses were supportive of the intention of EBM to improve patient care, they seemed to have little interest in engaging with the process of evidence gathering and appraisal. While I had assumed that every facet of EBP would be embraced by nurses with open arms, it did not occur to me at the time that their perceived lack of interest could equally have been due to a lack of skill. My impression of the nurses involved in this project was that while they appeared to be excellent and interested clinicians, many did not see the processes behind writing evidence-based practice guidelines as part of their role. It appeared that they were happy to follow the recommendations suggested by the guideline and in the time-honoured tradition of task-allocation in nursing, were keen to just get on with it! I also learnt that even with guidelines, implementing evidence-based recommendations into practice was not as easy as it sounds.

In 1998, I subscribed to an Evidence-based Health email discussion list (Evidence-Based-Health.jiscmail.ac.uk). The list was established in 1994 by a medical statistician from the London Hospital Medical College in the United Kingdom, in collaboration with leading EBM practitioners from Oxford and Cambridge. The list provides engaging and informed debate on all aspects of EBM, as well as disseminating information about the EBM world by advertising events and seminars. Over the past eight years discussion on the list has helped to shape the way I think about evidence. However, yet again I was confronted by my assumption that nurses are interested and engaged

in the debate about evidence-based care. There was (and still is) minimal participation on the list by nurses.

Following a sabbatical at McMaster University in 1999 to undertake the 'How to Teach Evidence-based Medicine' course, I felt better prepared to teach EBM but my view of evidence remained oriented towards the appraisal of research method. Reading Muir Gray's book *Evidence-based healthcare: How to make health policy and management decisions,*[27] finally impressed upon me that EBM had implications for healthcare that were much larger than evidence-based 'medicine' and much broader than research method. My somewhat simplistic and largely research-method based interpretation of evidence had been challenged by thinking about the potential for all health staff and consumers to be involved in evidence-based care. I started to think that perhaps good quality research was only part of this thing that could be called 'evidence' and that using evidence in practice required recognition that evidence from research may not always available (or possible) to implement, depending on the context of care.

At this time I consciously adopted the term evidence-based 'practice' –(EBP) the term I now use throughout the remainder of this thesis – in preference to evidence-based 'medicine'. In 2000 I was teaching EBP to post-registration nursing students and had moved on from my narrow 'research-method' version of EBP. I had started to use the excellent and more inclusive framework of the *Users' Guides to the Medical Literature*, the series published in the Journal of the American Medical Association throughout the 1990s and later as a book.[28] I also

relied on the equally useful *How to Read a Paper* series[29,30] published in the British Medical Journal in 1997.

In 1999, the role of nurse practitioner was formally recognized in NSW following an amendment to the Nurses and Midwives Act *1991*. The protected title of nurse practitioner (NP) or midwife practitioner (MP) can be used by a registered nurse or midwife who has satisfied the authorisation requirements of the NSW Nurses and Midwives Board. Authorisation allows the NP or MP to initiate diagnostic investigations, prescribe medications and make limited referrals under approved clinical guidelines. Following enactment of the legislation, I was engaged by a nursing college to conduct a series of two-day workshops around NSW on writing, implementing and evaluating evidence-based clinical practice guidelines for NPs. I used the NHMRC toolkit, *A guide to the development, implementation and evaluation of clinical practice guidelines*[31] as the basis for the workshop.

It had been my experience both as a clinical nurse and as a teacher that nurses made little reference to research when writing policies, procedures and guidelines. Consistent with my previous experience of trying to engage clinical nurses in finding and appraising evidence for guidelines in the *Improving Patient Outcomes Project*, it also appeared to me that nurses would rather write from their own perspective, than appraise and adapt the work of others. As many excellent national guidelines were already available for adaptation to local use, I decided it would be of most value to teach nurses how to evaluate existing guidelines and I chose the *AGREE* appraisal instrument[32] for this purpose. However, appraisal relies on having a

certain level of knowledge of what evidence is, how to grade it and how to make recommendations from it. This was not generally evident in the groups I visited around the state, and so I began to routinely allocate time in the workshops to teaching basic EBP skills before embarking on concepts of guideline development. In general, these highly experienced clinical nurses did not seem to me to have sufficient background preparation in EBP to be able to confidently use evidence in their future NP role, or to develop good quality evidence-based guidelines.

At this time, I was the nursing representative on an institutional ethics committee. I found it interesting that members of the committee seemed to assume that as a researcher and a nurse, I must automatically 'know' about qualitative research. While it is true that at one time qualitative methods may have dominated nursing research, this is no longer the case.[13] My own background was firmly grounded in quantitative method. Feeling somewhat under-prepared to evaluate the mainly qualitative ethics proposals that were directed my way, it was time to look more closely at the qualitative paradigm I had thus far tried to avoid. I attended a number of courses in qualitative research, read widely and genuinely became more interested in qualitative method. The topic of the interface between EBP and 'research method' arose again in the literature. This time it was in the context of the Cochrane Qualitative Methods Network and the work of Jeanie Popay and colleagues,[33] who were working to apply an evidence-based framework to the critical appraisal of qualitative research. Despite many attempts, an agreed parallel

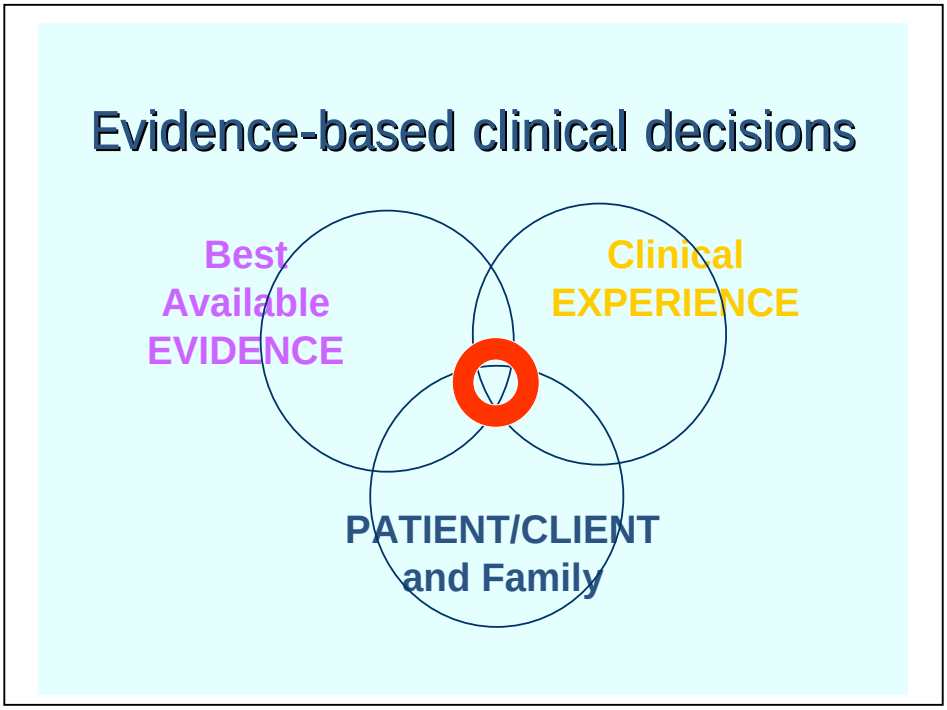
pathway for the critical evaluation and summary of qualitative research is still not well established. An affiliate organisation of the Australasian Cochrane Centre, the Joanna Briggs Institute (JBI), has taken up this challenge in Australia in recent years, with many nurses eagerly anticipating the outcome of their work.

My conceptual definition of evidence was becoming increasingly more orientated to the practicalities of the real world and less focussed on the details of the research methods used. My teaching now recognised more players in the game of evidence-based clinical decision-making (the evidence, the patient and their family and the clinicians judgment), which at this time, I usually presented in the form of a Venn diagram (Figure 1.1). I could see the importance of the critical intersection between these three components (indicated by a circle in Figure 1.1), and recognised that the amount of weight given to each would vary according to which aspects of the decision dominated in any given context. During this time, I thought a lot about where evidence comes from. I knew evidence came from research, but I had started to realise that others also believed evidence could come from other places.

I began to use method triangulation (combinations of both qualitative and quantitative methods) more often in the project proposals I put forward on behalf of the nursing and health services research group I still managed. It made sense to me that an evidence-based recommendation for treatment, even if arrived at by the most perfect research method, is of little value if a patient chooses not to accept

that recommendation or if the recommended treatment is unavailable to them as a choice.

Figure 1.1: Evidence-based decision making in three dimensions



There were clearly other issues that needed to be considered in making clinical decisions; for example, why a therapy is not acceptable to a patient or why there is poor compliance. These questions are best explored using qualitative research and I was beginning to understand just how broad the interpretation or meaning of 'evidence' might be. At this time, the focus of my teaching changed again to reflect what is now my mantra, that the best evidence is that which is the best available for the clinical question being asked.

1.3 Developing research questions

1.3.1 What level of EBP knowledge and skill do nurses have?

In 1998, Alastair McColl and colleagues[34] had published the results of a survey on general practitioners' perceptions of the route to EBM. The survey was published online and researchers around the world began using amended versions to study EBP skills and attitudes among healthcare workers.

I began using this survey prior to conducting EBP lectures with post-registration nursing students to encourage them to think about some of the issues we would be discussing in class. Generally, these students found the content of the survey difficult and appeared to have a limited understanding of the concepts, language and skills used in EBP. I had again made an assumption that experienced nurses undertaking further study in a specialty area would not only have a basic understanding of EBP, but also that this understanding would somehow be reflected in a common or shared view within the profession. Receiving the EBP surveys back from these students again made me question my assumptions about EBP in nursing. I questioned what I was teaching in regard to EBP, and how I was teaching it. This is what motivated me to enrol as a PhD student in 1999 and undertake this thesis. After receiving permission via email from Dr McColl,[34] and gaining ethics approval, I made further adaptations to the survey and repeated it with a larger sample of post-registration nurses enrolled at a nursing college in NSW. I wanted to know what baseline level of knowledge and skill for EBP post-

registration nurses had, and what definition of 'evidence' they were using when they answered questions posed in the survey. Further, I wanted to use this information as the platform for my own teaching of EBP.

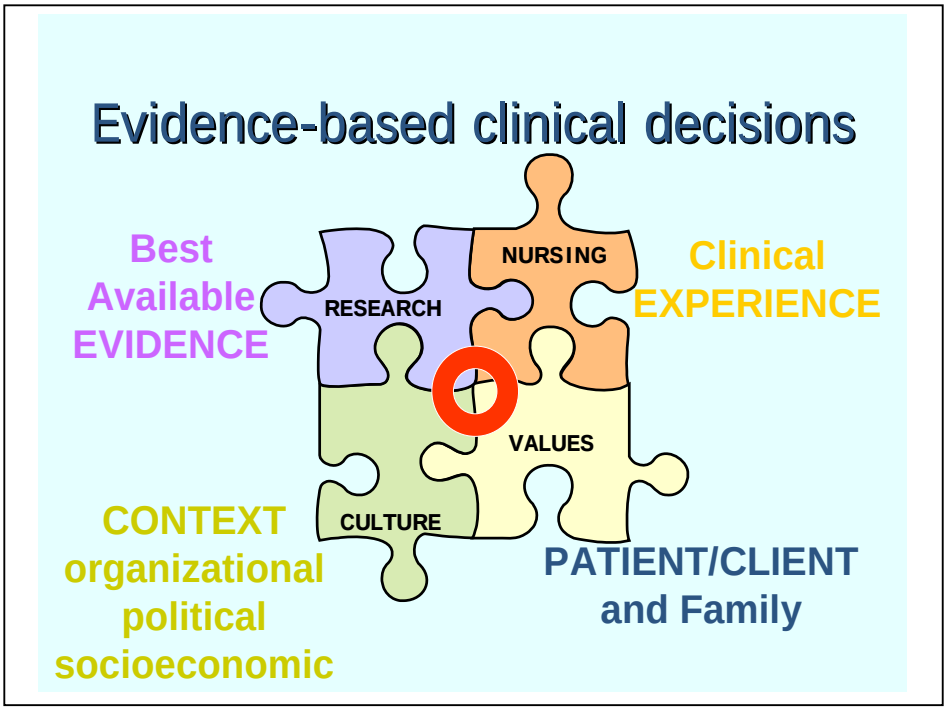
The results of the first distribution of the amended survey demonstrated that registered nurses attending continuing education courses in NSW appeared to have limited engagement with the concepts and skills of EBP and held varied definitions of evidence. I speculated that perhaps this was a result of the length of time since these nurses had studied, or perhaps they simply had not been exposed to EBP in their clinical work. If this were the case, new graduates of nursing programs would presumably demonstrate more skill and perhaps different attitudes towards EBP. Unlike many of the currently working nurses, they were studying in the era of EBP and, I assumed, would be more confident in answering the survey questions.

In NSW, approximately 70% of all nursing graduates register with a recruitment agency in their final semester. This organisation (the NSW New Graduate Nurse Recruitment Consortium, based in Sydney) matches students' preferred areas of practice and work location to the workforce requirements of local area health services. The Consortium was engaged to facilitate distribution of the EBP survey to their client base of third-year students who had almost completed their nursing course, but who had not yet entered the nursing workforce.

The survey responses of final year nursing students also revealed variation in definitions of evidence, and there were similar (yet less marked) areas of deficit in relation to EBP skills. Collectively, the results of the survey with pre- and post-registration nurses reinforced my concerns about what I was teaching, and how I was teaching it. The Venn diagram I used for teaching EBP no longer had three discrete circles (as in Figure 1.1). By this time, I had added a fourth dimension in response to my own broadening view of the context of evidence-based decision making, and as a result of what the survey results seemed to be saying. Adding a fourth dimension (context) widened the sphere of clinical decision-making to include the political, social and economic climate and the physical space (home, hospital, clinic etc.) in which the decision is made. The central circle in Figure 1.2 still represents the interplay of all four dimensions, weighted according to which aspects of the decision dominate in any given context.

I still believe that evidence must be derived from research, but understand that many other factors come into play in actually using evidence in practice. I now see evidence and evidence-based decision making within the much larger contextual jigsaw that is healthcare (Figure 1.2).

Figure 1.2: Evidence-based decision making in four dimensions



Various descriptions and pictorial representations of the relationship between the dimensions of EBP continued to appear in the EBM/EBP literature.[35-37] In addition to questioning the positivist nature of EBM, the engagement of other disciplines in evidence-based healthcare was increasingly posing a challenge to what counts as evidence, when, and for whom. Further, it occurred to me that if nurses hold different definitions of evidence from each other, what happens when EBP is discussed among interdisciplinary groups. Would they be talking about the same thing? What were nurses teaching other nurses about EBP? And could teachers and role models be part of the reason nurses held different definitions of evidence? Were we (unwittingly) contributing to the continuing difficulty nurses and others seemed to be having in implementing EBP?

Prompted by these concerns a colleague and I presented a paper to an international conference in 2002 entitled 'Teaching or preaching: evidence-based practice in the classroom'.[38] In this paper we argued that while the move of nursing into the tertiary sector may have increased the research capacity of an elite few, the research base for much of clinical nursing practice has remained largely undeveloped. We concluded that the move of nursing into higher education had clearly not been the catalyst for research activity and evidence transfer that had been hoped for.

In Australia, the National Health and Medical Research Council (NHMRC)[18,31] had adopted a hierarchy for rating the quality of evidence used in clinical practice guideline recommendations (Table 1.1). This rating system caused some issues for nursing in regard to producing EBP guidelines that met the criteria for quality evidence, as determined by the NHMRC standards. Nursing evidence was, more often than not, at the lower end of the NHMRC table (reproduced below), or worse from a hierarchical point of view, based on consensus only. Evidence for nursing practice has been (and often still is) equated with the 'soft sciences'[39] and as yet there is still very little Level I evidence for many nursing practices.

Table 1.1: Australian NHMRC Levels of Evidence

NHMRC Quality of Evidence Ratings ***Adapted from NHMRC[18,31]***	
Level I	Evidence obtained from a systematic review of all relevant randomised controlled trials
Level II	Evidence obtained from at least one properly designed randomised controlled trial
Level III-I	Evidence obtained from well designed controlled trials without randomisation
III-2	Evidence obtained from comparative studies with concurrent controls and allocation not randomised (cohort studies), case-control studies or interrupted time series with a control group
III-3	Evidence obtained from comparative studies with historical controls, two or more single-arm studies or interrupted time series without a parallel control group or dramatic results in uncontrolled experiments
Level IV	Evidence obtained from case series, either post-test or pre-test and post-test. Opinions of respected authorities based on clinical experience, descriptive studies or reports of expert committees

While there was a tendency for some within nursing to rail against the perceived biomedical dominance of this model, others (including me) tried to keep the NHMRC recommendations within context. I believe that many nurses did not fully understand the intention of such hierarchies and saw them as dogma rather than guidance. For example, the ratings in Table 1.1 apply to determining the best quality of evidence for making recommendations about interventions. Evidence-based practice guidelines can still be developed in the absence of Level I evidence; but greater responsibility is placed on the clinician to apply their judgment in implementing recommendations that are made from the best available, rather than the best possible,

evidence. Around the world, many combinations of numbers and/or letters have been applied to distinguish levels of evidence in guideline recommendations, to assist clinicians in their interpretation and use of evidence-based guidance.

In 2002, I was asked to write a chapter on qualitative research for the second edition of *Evidence-based Pediatrics and Child Health*[40]. It was during reflection on this work that I started to understand why some of my (mainly nursing) colleagues may have been so strongly opposed to the structure of EBM and the hierarchies of evidence. Given that rating scales such as that from the NHMRC (Table 1.1) were designed to assist in clinical decisions about interventions, I wondered whether the relative lack of intervention studies in nursing meant that some nurses were applying the scales inappropriately to other types of research questions. Such hierarchies might also have left some nurses feeling disillusioned because evidence for nursing practice consistency failed to measure up to the NHMRC standards. I am not sure that the differentiation between clinical question and study type was (or is) entirely clear to all members of the nursing profession. However, other nurses have shown confidence in adapting the NHMRC level of evidence table. For example; in the case of rating qualitative studies, I have seen this table turned 'upside-down' with opinion-based evidence at the top of the table (becoming Level I evidence), and the systematic review of all relevant randomised controlled trials relegated to the bottom. Others continued to dismiss EBM as just another strategy for the patriarchal domination of nursing and choose only those steps of EBM that fitted

with personal definitions of evidence or were deemed to be most useful to students, for example, teaching literature searching for the purposes of writing essays or assignments.

1.3.2 What do nursing opinion leaders understand as evidence for EBP?

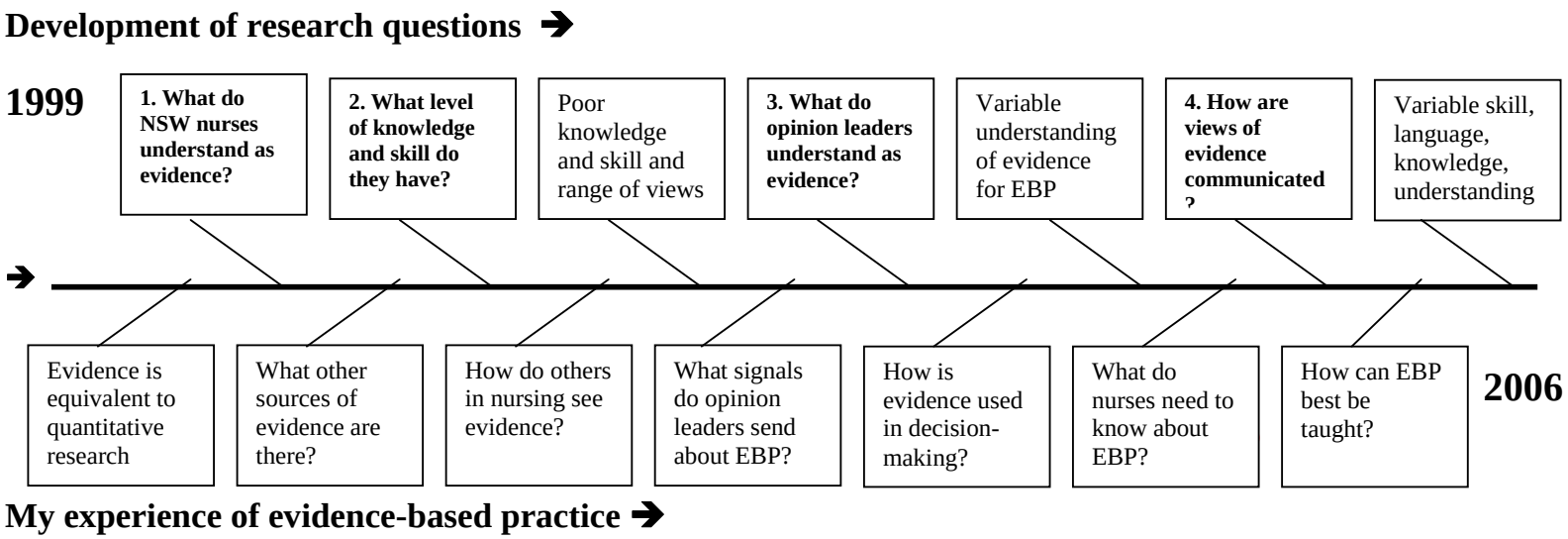
The second study in this thesis was prompted by the survey results, but also by my observations of nursing colleagues and students. Why was EBP so apparently unfamiliar to the culture and context of clinical nursing? Why did nurses seem so generally unprepared for evidence-based care? What were undergraduate nurses being taught about EBP?

An original intent of this thesis was to examine the way evidence is understood in relation to what and how (by whom and when) EBP is taught to undergraduate nurses. I was hoping to identify ways of teaching EBP that would be of greater practical value to post-registration nurses working in a clinical environment. I anticipated that conducting interviews with professional role models and opinion leaders in nursing would elicit a consensus definition of EBP that could be applied in nursing education and to the wider profession. I envisaged that this 'endorsed view' would direct me about how undergraduates were being prepared for EBP and provide a foundation on which to base continuing EBP education. I looked to documents issued by education providers to examine the language and format educators used in teaching research and EBP to undergraduates.

I started this work with the belief that registered nurses in NSW had a basic understanding of EBP. More importantly, I had assumed that there was a shared view of evidence in the profession and that I would find consensus among its leaders on what EBP in nursing actually meant. My own understanding of EBP has changed over time and the questions I had about what to teach post-registration nurses about EBP have been answered – just not in the way I had anticipated. I understand EBP as an approach to practice in which the best available evidence (preferably from research) is used to make clinical and other healthcare decisions with the patient or client within the context of the question being asked, the environment, and available resources. The findings of this thesis were not what I had expected but the research led me on a path in which my own views and those of the nursing profession with regard to EBP were questioned and explored. I believe the results of this thesis provide a further insight into why evidence transfer and implementation is, and has been, so difficult for nursing.

Figure 1.3 (page 37) summarises the stages of development of this thesis. It tracks the studies undertaken and presents them in parallel to the development of my own thinking about EBP over time. This diagram is intended as a roadmap of the aims and research questions posed in this thesis. The map leads to the studies described in detail in each of the following chapters.

Figure 1.3: Development of a thesis



1.4 Aims and research questions

This thesis aims to determine NSW nurses' knowledge and understanding of EBP in order to propose recommendations for teaching EBP in nursing. The three central aims of this thesis are to:

1. determine what nurses in NSW currently know and understand about EBP and explore how individual perceptions of evidence impact upon their readiness for evidence-based nursing;
2. examine current approaches to teaching EBP to undergraduate nurses in NSW in an attempt to identify the skills and knowledge required to maximise the potential for nurses of the future to confidently engage in evidence-based care;
3. make recommendations for teaching EBP. These recommendations are offered as a starting point for a shared professional approach to improving nurses' readiness for EBP.

The research questions (set out below) are posed to explore how individual perceptions of evidence impact upon nurses' readiness for EBP. The assumption that nurses share a common understanding of evidence is investigated by documenting the attitudes, knowledge and skill for EBP among nurses with different levels of experience in nursing practice, and eliciting the views of those who are leaders and role models to the profession. Current approaches to teaching EBP to undergraduate nurses are investigated and opinion leaders' ideas on maximising the potential for future nurses to confidently engage in EBP are explored. From these investigations, this thesis will propose options for the promotion of EBP in nursing education.

1.4.1 Research Questions

1. What do nurses in NSW understand as evidence for evidence-based practice?
2. What level of knowledge and skill do NSW nurses have in regard to the concepts of evidence-based practice?
3. What do opinion leaders and role models in nursing understand as evidence for EBP?
4. How are the concepts of research and evidence being articulated and communicated to undergraduate nursing students?

The rationale underpinning these research questions is that if no common understanding of 'evidence' exists among nurses, it is difficult if not impossible for the nursing profession to define evidence for nursing education, or for practice. The latest Australian competency standards for the registered nurse and midwife were endorsed by the NSW Nurses and Midwives Board in May 2006 and the Board has directed that the new standards will be used in assessing all courses and all individual applications for registration from January 2007. Among the standards it is stated that 'the registered nurse provides evidence-based nursing care to people of all ages and all cultural groups' and 'practices within an evidence-based framework'.[1] Similarly, the midwife 'uses research to inform midwifery practice' and 'interprets evidence as a basis to inform practice'.[2] I do not believe that professional associations and regulatory authorities can currently expect this as an outcome of undergraduate preparation until a common approach to teaching EBP in undergraduate education has been established.

1.4.2 Design and methods

A combination of methods is used to explore the research questions and these are described in detail within each of the next three chapters. The three main investigations conducted as part of this study are:

1. A survey on evidence-based practice (*Chapter 3*)
2. In-depth interviews with nursing opinion leaders (*Chapter 4*)
3. An analysis of documents from nursing educational institutions examining the use of words around research and EBP (*Chapter 5*).

A combination of descriptive and inferential statistics is used to analyse the survey responses. Text from open-ended survey questions is summarised using a qualitative thematic method. The qualitatively different ways EBP is understood by nursing opinion leaders are explored using in-depth interviews and a phenomenographic approach to the analysis. Findings from the interviews are discussed with reference to content from course outlines, curricula and school or faculty websites in a content analysis. This examines how EBP is described within documents from respective educational institutions offering undergraduate nursing education. Method triangulation is used in this thesis is to secure a more in-depth understanding of EBP among NSW nurses. Morse[41] cautions that while countless studies attempt to combine qualitative and quantitative techniques, few actually integrate these components in the findings. In this thesis, a number of different perspectives are taken to look at the ways in which NSW nurses understand evidence.

1.5 Chapter Summary

This chapter has offered my own perspective on EBP in nursing. However, as Denzin and Lincoln[42] suggest, we can never completely capture objective reality, we can only know something through its representations. A survey with nurses, interviews with opinion leaders and content analysis of education documents are all methods used in this thesis to explore representations of how EBP is understood in nursing from the perspective of the student and clinical nurse, nursing leaders and providers of nursing education. The findings of this thesis are validated through observation of the same phenomena across three different methodological and theoretical perspectives. In *Chapter 6*, the findings of these three studies are brought together within the context of my own experience of EBP and that of Australian healthcare (*Chapter 2*) to make recommendations for teaching EBP in nursing. The review of Australian and international literature (*Chapter 2*) describes Australian healthcare in the global context and discusses the current climate of education and leadership for EBP within the Australian nursing environment.

Chapter 2

Evidence-based practice in context

2.1 Chapter overview

Many of the challenges faced by Australian and NSW nurses are similar the world over: workforce shortages and increased workload, global trends in chronic and complex disease management, an ageing population, and constantly changing healthcare priorities and demands. The context of healthcare impacts upon the successful implementation of evidence into practice, and also the practitioner's ability to engage in evidence-based care.

In a framework developed and tested over a number of years by a group of researchers in the United Kingdom,[43-45] context (or the setting) was consistently highlighted as a key factor in the successful implementation and uptake of evidence in nursing. In this framework, evidence implementation is described as a function of the relationship between the domains of evidence (defined as research, clinical experience and patient preferences), the context (defined as culture, leadership and reliance upon multiple information sources) and facilitation (the characteristics, role and style of the implementation). The framework proposes that the successful implementation of evidence is affected by all three of these domains and is most likely to occur when the evidence is robust, the context is receptive to change and where a change process is appropriately facilitated.[43,44]

While this thesis does not propose to discuss evidence implementation, the characteristics of context (the setting in which education and practice take place) are equally important to this study of how evidence is understood by nurses. Evidence-based practice (EBP) is, after all, the outcome of a process which begins with an understanding of what kind of evidence is the best available for a given clinical question, within a given context. In addition to the contextual factors of culture, leadership and multiple information sources discussed above, French[46] also adds the physical, social and organisational domains to the list of contextual factors known to influence research use in nursing and therefore EBP.

This chapter outlines a review of Australian and international literature in order to paint a picture of the context for EBP in Australian nursing. It describes the general context of Australian healthcare and the physical and social organisation of Australian nursing education and the nursing workforce. Australian nursing takes a lead from practice models originating in America, Canada and the United Kingdom. These form the bulk of published literature reviewed in this chapter. However, reference is made to Australian studies where these are available and, in particular, to studies involving nurses in the state of New South Wales (NSW) who form the population of interest in this thesis.

2.2 Nursing in Australia

> *"Workforce shortages and the increasing demands of an ageing community are placing mounting pressures on Australia's health care system. Improving preventative care, increasing the number of training places and retaining more of those currently employed are all important strategies but they don't go far enough. Lasting gains can only be achieved if the current fragmented delivery of services is overcome and if professional and regulatory rigidities and other barriers to innovation are removed."*
>
> Commissioner M Woods, *Australian Government Productivity Commission* 2005[i]

The Australian healthcare system is a mix of public and privately funded services. Around 70% of healthcare is financed by government, with the Commonwealth contributing approximately two-thirds of this through a complex array of healthcare agreements with States and Territories. State and Territory governments provide the other third. The majority of government-funded services are provided through 750 public hospitals located across Australia. Around 29% (218) of these public hospitals are located in the state of New South Wales,[47] which although not the largest in area, has the highest resident population of around 6.5 million people.

The challenges of Australian healthcare are similar to those faced by any developed country: declining fertility rates, an ageing population, chronic diseases, an increasingly litigious society and a changing social environment impacting upon patterns of work and the workforce.[47] Redesign of the health workforce is often proposed as a solution to this increasingly challenging environment, with the aim of

[i] Commissioner Mike Woods. Reforms needed to meet health workforce pressures. Media Release. Australian Government Productivity Commission 2006 Available from: URL:http://www.pc.gov.au/study/healthworkforce/finalreport/mediarelease.html

offering a more flexible approach to the way healthcare is delivered.[48] In this regard, two major studies of the Australian nursing workforce commissioned by the Commonwealth government have supported expansion of the current and future roles of nurses in this country.

Reporting in 2002, the *National Review of Nursing Education: Our Duty of Care*[49] and the Senate Inquiry into nursing entitled *The Patient Profession: Time for Action*[50] both promoted expansion of the nurse practitioner role across Australia, in line with the development of national standards for this role. However, by definition, health workforce redesign challenges current role definitions and therefore, current approaches to the education of healthcare workers.[51] Recent submissions to an Australian Government Productivity Commission Health Workforce Study[52] highlighted a number of issues nursing will be forced to confront in the redesign of the Australian health workforce expected in the near future.

For example, as outlined above, NSW was the first state in Australia to enact legislation for the authorisation of nurse practitioners (NPs). Early moves to establish the legislative underpinnings of this role were met with concerted opposition from medical professional associations, who were strongly supported by the media.[53] Initial evaluations of the role and function of NPs in NSW noted that legal barriers were limiting the efficacy of these advanced practice positions, and reforms were proposed in relation to expanding prescribing rights and the initiation of diagnostic procedures.[54] This caused further apprehension amongst doctors (and some nurses), and prompted the media to suggest that nurses would become 'mini-

doctors' or 'maxi-nurses'. Of particular concern to some in the medical profession has been the extent to which nurses and professions other than medicine have now gained (albeit limited) independent prescribing and practice rights. Yet, nurse practitioners have not yet won the right to charge for their services under the Australian government healthcare subsidy agreements (Medicare). Allowing this right is viewed by some as offering NPs further encouragement to 'take patients away' from doctors, and is seen as having potential financial implications for general practice services, in particular.

Currently within NSW, it appears that role substitution by nurses is only tolerated when the physical context of practice is less desirable to the medical profession (for example, in rural areas or in aged care). Paradoxically, general practitioners (GPs) have sought the introduction of Medicare rebates for practice nurses (nurses employed by GPs to work within their practice).[55] While this strategy undoubtedly increases the capacity and range of services a general practice can offer,[56] it does little to address imbalances of power and control between the disciplines of medicine and nursing. While there have been significant innovations around implementing and evaluating interdisciplinary models of education and patient care, it is clear that reform will require a significant shift in the attitude and culture of a wide range of interest groups.[57-59]

Similarly, nursing faces its own cultural challenge as traditional practice models grow to include a greater number of unqualified healthcare personnel[60] and an expanded scope of practice for the

enrolled nurse. For all healthcare workers, identifying and agreeing on the scope of practice for each new role is implicit to changing the boundaries around these roles. Moving health care workers to a collegial position in which they can identify the appropriate mix of skills (regardless of profession) to produce the desired outcome (the safe, effective and efficient provision of a service to a patient at the centre of care) will require significant time and, more specifically, an impetus of significant magnitude to force change in long-held traditions around the roles and rituals of healthcare in Australia.

2.2.1 The nursing workforce

More than half of the health workforce in Australia (244,473 or 54%), is employed in nursing. In 2001 this represented 1,200 nurses per 100,000 population.[61] Worldwide trends in workforce patterns are mirrored in the nursing workforce. The proportion of registered nurses aged 45 years or more almost doubled between 1987 and 2001, and there is an increasing proportion of nurses (excluding managers, educators and researchers) working part-time.[62] Casualisation of the nursing workforce has also increased, with greater use of agency (non-permanent) staff in both public and private healthcare facilities.[49] In 2003, approximately 74,000 nurses were registered or enrolled with the Nurses and Midwives Board of NSW. At this time, the average NSW nurse was 42.6 years of age and working an average 33.2 hours per week.[61] Despite small increases in the number of males entering the profession (between 1997 and 2003 the proportion of male nurses rose from 7.6 to 8.6%), nursing remains a predominantly female

occupation.[61] There are national and statewide shortages in many general and specialty areas of nursing practice in Australia.[49]

There are also many other workforce issues Australian nurses have in common with their international colleagues. Although a recent decline in enrolments to Australian nursing programs appears to have been temporarily diverted,[63] retention of nurses once they have qualified is impacted upon by dissatisfaction with standards of care, an increasingly violent workplace with high consumer expectations, high patient turnover, and more complex health problems requiring specialist care.[64,65] The current career structure in Australian nursing is well overdue for revision,[65,66] but this has been hampered by fragmentation among nursing specialties, variation in education and practices between the States and Territories, and more importantly, the lack of a unified voice for nursing. The Senate Inquiry into nursing[67] recommended that 'the Commonwealth, as a matter of urgency, establish the position of Chief Nursing Officer within the Department of Health and Ageing'. This position would collectively represent Australian nursing at the federal government level. The recommendation has been ignored.

In 2000, I was project manager for a large study commissioned by the nursing branch of the NSW Health Department to determine the main reason more than one-third (30,000) of NSW registered nurses were not working in nursing at that time. The study showed that the reasons for leaving nursing were multi-faceted but the main reason (cited by 28% of respondents) was family responsibilities. This included caring for children, but many also cited the responsibility of

caring for elderly parents or relatives. The second most common reason NSW nurses gave for leaving the nursing workforce was to undertake employment that was more suited to their lifestyle. Shift-work featured as a strong disincentive in nursing work. Further details of the project can be viewed in the Executive Summary of the project report in Appendix A. Although I was the sole author of this report, it is copyright to the NSW Health Department.[68] In the 2002 *National Review of Nursing Education*, Saltmarsh et al.[69] also reported that while Australian nursing students saw benefit in choosing nursing as a career in terms of opportunities for variety, lifestyle and travel, there was a clear expectation that nursing was a stepping-stone to a particular specialisation or to another career, rather than a job for life.

With regard to nursing workforce issues, Australian nurses have been interested in following the success of the 'Magnet' hospitals concept in the United States.[70-72] Magnet hospitals are so-called because of their ability to attract and retain staff through organisational attributes which promote appropriate staffing levels and skill-mix, and which encourage professional autonomy and positive relationships with colleagues. In combination with high nurse-to-patient ratios, these organisational attributes have been shown to positively influence both nurse retention and patient outcomes.[73] Early results from applying American Magnet concepts to Australian healthcare are encouraging, but the results of studies linking Magnet hospital status to staff or patient outcomes are not yet available in Australia.[74]

2.2.2 Leadership in nursing

Strong leadership is identified as an important factor in the success of quality improvement and organisational change management strategies undertaken in nursing.[75] Nursing leaders also perform an interpretation and translation role between the organisational context and nursing practice. Nursing leaders and managers interpret policy and research into the language of practice, and translate academic, management and political ideologies into priorities for the clinical context.[76] In nursing, legitimacy for leadership has always been linked to the demonstration of knowledge derived from the philosophical basis of nursing theory and nursing practice.[76] This ability to uphold the values of nursing, while operating effectively within the healthcare context, is an important feature of nursing leadership.

Borbasi and Gaston[77] warn of a crisis in nursing leadership in Australia. This is seen as a consequence of the social, political and fiscal constraints of the current healthcare system. It also partly results from the fact that nurses applying for middle-management positions are no longer competitive in a generalist environment which is tightly controlled under economic rationalist models. Previously, nursing leaders were seen as synonymous with nursing management, but as Borbasi and Gaston suggest, those with a broader view of the 'cost versus quality' challenge of healthcare are quickly 'promoted to boardroom positions far removed from the exigencies of the bedside'.[77] This effectively removes good leaders and role models from nursing. The move of nursing education to the tertiary sector is another factor that has contributed to reducing student nurses'

exposure to nursing leaders. Students no longer work alongside clinical leaders and role models as they did under the apprenticeship model of nurse training. Yet, being a good role model is consistently rated by nursing students as a defining characteristic of an effective clinical leader.[78,79]

Strong leadership will also be required for EBP to be successfully integrated into nursing education and practice. Stetler[80] conceptualised the integration of EBP into a nursing division as comprising three major activities: establishing a new culture; creating the capacity for change; and sustaining the shift through revisions in infrastructure. She concluded that eventually nursing administrators will be required to define what is (and what isn't) evidence-based nursing practice for their particular context. The Stetler[81] and Conduct and Utilisation of Research in Nursing (CURN) models[82] have both been applied to a teaching strategy for research utilisation and EBP in a US baccalaureate (bachelor degree) program.[83] This educational model is based on the premise that when students are adequately prepared, and actually experience real-life EBP innovation in the workplace, EBP is valued as an important dimension of their clinical practice. Similar themes arose in the development of an Australian EBP education model.[6] The Australian model proposed establishing, creating and sustaining capacity for EBP through vertical integration of EBP concepts throughout a newly developed nursing undergraduate curriculum, and mutual planning with local services such as hospitals and government. In this model, the promotion of EBP by school or faculty staff (EBP champions) and a physical space

(in this case, a dedicated EBP unit) provided tangible infrastructure support for EBP.[6] These models are described further in *Chapter 6*.

A number of Cochrane systematic reviews on change management strategies such as educational outreach, continuing education, audit and feedback, and more recently, tailored interventions[84] suggest that single strategies (or people) are unlikely to be successful in changing health professionals' behaviours. In addition, accumulated knowledge about barriers to nurses' engagement with EBP, evidence that passive diffusion strategies for EBP do not work, and arguments presenting the importance of context, all support recent calls for intermediaries to influence nurses towards specific goals such as research utilisation[85] and EBP. Intermediaries are also known as change agents, champions, facilitators, linking agents, knowledge brokers or opinion leaders and are situated either formally or informally within the health disciplines. Although other models aimed at behaviour change have suggested using local opinion leaders to implement new ideas or innovations, a Cochrane review by Thomson O'Brien et al.[86] was unable to find good quality evidence of the effectiveness of opinion leaders in influencing professional behaviours or health outcomes. However, through transmitting opinions and norms, and modelling specific behaviours, it is suggested that opinion leaders may perform a sanctioning function for new ideas.[86] This was the rationale for conducting interviews about EBP with NSW nursing opinion leaders in this thesis.

2.3 Nursing Education in Australia

It is possible to identify three major changes in the landscape of Australian education that have had a significant impact on nursing education over the past 20 years. These were:

1. the development of a national framework for vocational education and training (VET) which saw enrolled nurse training move from a hospital-based program to a Certificate IV or Diploma in the VET sector;
2. a restructure of higher education from a two-tiered system consisting of colleges of advanced education and universities into a unified single-tier system of universities;
3. the transfer of registered nurse preparation from a hospital-based apprenticeship program to a three-year program in the higher education sector (a university bachelor degree).[87,88]

Since the move of nursing to the higher education sector in 1994, nursing has continued to develop as an academic discipline.[89] The proportion of nurse academics with doctorates as their highest qualification has almost trebled (from 7 to 19%), and the number of educators with a Bachelor Degree in nursing or health (as opposed to degrees in other disciplines, particularly the social sciences) has risen from 5% to 51%.[90]

2.3.1 Restructure of nursing education

The restructure of higher education was significant to nursing for a number of reasons that are relevant to this thesis. Both enrolled and registered nurse training was removed from the hospital setting, meaning students were no longer part of the regular nursing

workforce. Many nurse educator positions were re-aligned to different educational priorities. As students, nurses now have more frequent exposure to academic leaders as role models than to clinical leaders.

Many nursing courses were already established in colleges of advanced education prior to the 1984 agreement to transfer nursing to the higher education sector.[49] The transfer forced the merger of often different philosophical and curriculum approaches. In addition, when the transfer was completed across all Australian states in 1994, the Commonwealth government assumed funding for undergraduate nursing courses within the higher education framework. NSW was one of the earliest States to complete the transition, with all nursing courses moved to the university sector by 1985, almost 10 years earlier than some of the other States. Since then, nursing and health science (nursing) degrees have been funded under the same grant-based structure as any other (non-practice based) university courses and are subject to the same research assessment process for their allocation of funding.

The findings of a large cross-sectional study conducted in the United States are often cited as evidence for the move of nursing education to the higher education sector.[91] This study of 168 hospitals examined the association between nurses' educational levels and patient mortality. Although contentious, the study found that after adjusting for patient, nurse, surgeon and hospital variables, a 10% increase in the proportion of nurses holding a bachelors degree (or higher) was associated with 5% decrease in the likelihood of both patients dying

within 30 days of admission and the odds of failure to rescue (deaths in patients with serious complications).

In Australia, both the Nurses Registration Board of NSW (now the NSW Nurses and Midwives Board) and the Queensland Nursing Council independently conducted studies into aspects of tertiary education for nursing. NSW focused on entry-level competencies by studying the expectations of both new graduates and their work colleagues,[92] while the Queensland study reviewed nursing curricula, undergraduate clinical education and transition support for new graduates.[93] The results of the NSW study are discussed below in Section 2.4. The integrative systematic review undertaken in Queensland found that at the time, the success of nursing curricula were judged largely on the opinion of students, or the preferences of academics. There was scant evidence of an industry voice or baseline information on which informed decisions about Australian nursing curricula could be made. Recommendations from the Queensland Nursing Council's review included development of a national strategy for research into all aspects of educational preparation for nursing practice, and the development of an evaluation process which would serve to benchmark Australian nursing curricula. Some of these recommendations were addressed further in the *National Review of Nursing Education*.[49]

2.3.2 National Reviews of Nursing and Nursing Education

Between 2001 and 2002 the *National Review of Nursing Education: Our Duty of Care*[49], the Senate Inquiry into nursing *The Patient Profession:*

Time for Action,[50] and a general review of higher education had all been jointly commissioned by the Commonwealth Government. The national review of nursing education[49] examined the future educational needs of nurses in the health, community and aged-care sectors to advise on appropriate educational policy and funding frameworks. Reflecting the complex structure of Australian healthcare, the review found that many of the barriers to further development of the nursing profession resulted from nursing services being organised largely within State and Territory jurisdictions which ignored the national context, and lacked a nationally consistent approach. The review also highlighted the lack of communication between State/Territory health systems (which are State funded) and the Commonwealth government funded university sector.

2.3.3 Outcome of the reviews

Thirty-six recommendations from the national review[49] were grouped into three main strategic areas:

Strategy 1: Building a sustainable nursing workforce
Strategy 2: Capacity building
Strategy 3: Maximising health outcomes through quality education

A National Nursing and Nursing Education Taskforce (N^3ET) was formed to implement the recommendations. Among these was a request for a nationally consistent approach to both the standards and scope of Australian nursing practice, and a revision of national competency standards for the registered nurse, midwife and nurse

practitioner. These were released[1,2] and subsequently endorsed by the NSW Nurses and Midwives Board in May 2006.

The national review had also found wide variation between nursing education programs in the amount of time spent in clinical placements (off-campus) and in preparation for clinical specialisation. The Senate inquiry had also heard evidence that the 'level of practical preparation of graduates for entry-level practice is variable across universities and across graduates, and in many instances, insufficient to meet organisational requirements'.[94] Collectively, the outcomes of the reviews fuelled political and media debate. The leader of the NSW State opposition party in 2005 (John Brogden) called for nurse education to be back in hospitals because of concerns about nursing students undertaking a number of short placements across a number of different sites. In essence, a full three-year hospital based training had been collapsed into six-semesters of an academic calendar. This was having a significant impact on the amount of time available to deliver a comprehensive nursing program.

The competing demands of the crowded three-year undergraduate program, combined with demands to fulfil requirements for clinically based practice experience, collectively makes the prioritising and placement of subjects within the undergraduate nursing curriculum a difficult task.[63] Calls were made to extend undergraduate courses from three to four years and to increase program diversity. Australia is a multicultural society and yet, as part of a team investigating approaches to multicultural health for the national review, our study found limited evidence of attention to the health of culturally and

linguistically diverse groups, or to concepts of multicultural care within Australian nursing education.[95] Requirements for cultural competency in nursing were left largely to the discretion of the academic body or institutional provider and professional dialogue between academics, educators and the clinical setting on this topic appeared tokenistic. We found no consistent definition of what is required for the preparation of undergraduates for cultural safety, and minimal guidance from peak professional organisations. At the time of the study, only one Australian university was offering an undergraduate program in Indigenous health.

A number of providers across Australia currently offer four-year combined degrees to address gaps arising from the lack of space in three-year programs. While not generally supported by the national review as a model for nursing education, current four-year programs consist mainly of Bachelors of Nursing combined with psychology, arts or science degrees; or combined with other specialist nursing programs such as midwifery or rural health.[63] It is interesting that in a recent report from one of the four-year programs in rural nursing, the research component was viewed by students as one of the greatest benefits of the course.[96]

2.3.4 Post-registration education

Nurses are high consumers of continuing education. In 1997, more than 135,000 nurses in Australian (61% of the total workforce) held some type of post-registration qualification.[97] In a more recent review conducted in South Australia, 46.8% of all employed nurses and

midwives had undertaken either a hospital-based or tertiary qualification following their registration as a nurse.[98] Critical care, emergency and midwifery were the most commonly chosen specialty areas for continuing education.

Reporting for the national review, Ogle et al.[63] collated data on all post-registration courses undertaken in 2001 that were six months or longer in duration (or equivalent full-time study). Their sample included Graduate Certificates, Graduate Diplomas and Master's degree courses leading to specialty nursing qualifications, including those required for nurse practitioner registration. The report categorised student completions for post-registration courses into 13 broad specialty areas. In 2001, high dependency nursing (22.4%) and midwifery (22.0%) accounted for the largest proportion of post-registration education courses undertaken by nurses in Australia. However, as two states then offered undergraduate midwifery programs, 217 pre-registration students were included in the specialty statistics for midwifery.

In 2001, courses offering research as the main specialty accounted for only 9.5% of all post-registration courses undertaken by Australian nurses, and for 60 of 2760 (or 2%) student completions. This figure was projected to increase to 108 of 3326 (3%) by 2002. In NSW, students enrolled in research courses accounted for 7.3% of enrolments by broad-band specialty in 2001. High dependency nursing (25.8%), midwifery (13.3%) and general nursing (10.9%) courses were the most popular in NSW.[63]

2.4 Research education in undergraduate nursing programs

> *"Teachers of nursing, along with teachers and administrators of research must accept the responsibility for the development of competence in research. Teaching and research go hand-in-hand in the professions. Those who instruct must develop the scientific attitude in students. Under their stimulation and supervision, students can begin some elementary research, singly and in groups. The classroom can become a seminar for the testing of hypotheses and conclusions. In institutions where democracy prevails, staff members can also be stimulated by eager students, and required to defend their own work."*
>
> Bixler GK & Bixler RW. The professional status of nursing, *American Journal of Nursing* 45:732, Sept 1945[ii]

The above quotation was published in the *American Journal of Nursing* in 1945, but discussion on the need for, or utility of, research education in undergraduate programs continues. A survey of recently graduated doctors, nurses and physiotherapists conducted in the United Kingdom[99] again concluded that undergraduate research programs have the capacity to improve the perceived ability of healthcare practitioners to use research in practice. Although limited by a poor response rate, nurse respondents were reported to have more confidence than the other professional groups in the study in performing a list of research and other evidence-based activities, and were more likely to attribute their ability to university or college training. Some of the differences between professional groups were attributed to the way research is taught, with the authors describing nursing as taking a 'broad-brush' approach, while medicine tends to focus on epidemiology and statistics.[99] The hidden curriculum was also seen to play a part. The hidden curriculum refers to the set of

[ii] Cited by Carnegie ME. The research attitude begins on the undergraduate level [Editorial]. *Nursing Research* 1974;23(2):99.

influences and rules governing learning processes, such as the hierarchies and rituals that accompany practice and which acculturate students as they develop within their chosen profession.[5,100]

Teachers of research subjects may also have an impact on the subsequent use of research in practice. Another English study[101] found limited involvement of nurse teachers in research activity outside the remit of teaching. Perceptions of research, and confidence in teaching it were related to the nurse teachers' individual levels of preparation for research, and 43% of the nurse teachers in this study reportedly felt unprepared for this role. Another study examining information technology (IT) competencies among nursing faculty, students and practicing nurses in the United States[102] also found a gap in the ability of nursing faculty to prepare nurses for the use of IT resources in daily practice and called for more champions in this area. The study reported a curriculum focus on accessing resources (computer literacy) rather than using resources (information literacy). IT content related to EBP was visible in only one-third of the curricula included in their review.[102]

It appears that discrete aspects of the research process and critical appraisal currently form the basis of research education in most undergraduate nursing[6] and medical curricula.[103] A qualitative study of 13 full-time nursing students in the United Kingdom[104] outlined student complaints about the early introduction of research into their program of study. Most students had not expected a research subject, did not appreciate the relevance of research to nursing, and felt their first research module had led to a loss of motivation and increased

anxiety. The students requested more practical activities, with small group work for learning research, and reportedly found the language of research unfamiliar and alienating. A theme of resistance emerged from the interviews in this study: students were resistant to research themselves, but they also perceived opposition and resistance to research from clinical nurses and managers in the workplace. Similar to Australia, the UK has experienced a number of changes to nursing education in recent years. As more nurses become familiar with research, it is anticipated that more supportive and encouraging role models will emerge to increase students' perceptions of the usefulness of research in practice.[90,104] However, there has been limited discussion of EBP as an educational paradigm in nursing to date.[105]

2.4.1 Nursing research education in Australia

An Australia-wide study conducted more than a decade ago found a mismatch between research education beliefs and practices in one-third of all undergraduate nursing programs.[4] The study called for research policy formulation across university, state and national levels. There is no evidence that this has occurred.

In NSW, a large study was undertaken by the Nurses Registration Board of NSW[92] to examine expectations of competency among registered nurses beginning practice in 1997. Using the national competency standards as a framework, the study compared new graduates' expectations of their competency for practice with the expectations of experienced clinical nurses. Overall, the expectations of both groups were similar for most of the required clinical and

professional competencies, except for those requiring higher-order reasoning. One of these higher-order competencies related to 'recognising the value of research in contributing to developments in nursing and improved standards of care'. Compared to all other competencies, this received the lowest overall score for graduates' ability to meet the competency standard[92] and graduates rated themselves more highly on this competency than the experienced nurses. The only other competency in which a mismatch between the expectations of graduates and experienced nurses occurred was for 'ability to assist individuals or groups to make informed decisions'. Again, graduates were more confident in their self-rating.

Among the thirty-six recommendations of the more recent *National Review of Nursing Education*[49], Recommendation 8 was the only one to address research and research training. Under the strategic heading of capacity building, the report states:

> Nursing research and the development of nursing researchers provide the underpinning infrastructure for good decisions … The means to more efficient, effective health outcomes from nursing work and to quality education of nurses is building research capacity and developing the ability to apply the findings of that research.
> *National Review of Nursing Education* 2002[iii]

The response of the National Nursing and Nursing Education Taskforce (N^3ET) formed to implement the recommendations was to establish baseline data through an audit of research scholarships and

[iii] Commonwealth of Australia. *National review of nursing education: Our duty of care.* Canberra: 2002 p.15.

training places for nurses and midwives, and to identify national nursing research priorities and options for future funding.[106] While one of the themes addressed at N^{3}ET forums held throughout Australia during 2005 was 'enhancing the dissemination and utilisation of research findings', there has been no investigation to date into any aspect of undergraduate preparation in this regard (although I raised this issue at the Taskforce forum I attended in Sydney). Outcomes from the Taskforce regarding the dissemination and utilisation of research are also not yet forthcoming.

It is my view that in a somewhat literal interpretation of the recommendations of the national review, the Taskforce has focussed their work for Recommendation 8 on aspects of training nurses to 'do' research. This is evident through their emphasis on scholarships, research priorities and funding. However, in focus groups held with Australian nursing students for the national review, Saltmarsh et al.[69] reported that students were most intent on careers involving actual nursing practice and considered the emphasis on research in their education an 'undesirable sidetrack'. None of the 78 students participating in the focus groups anticipated using the research skills they were being taught. It appears that the mismatch between research education beliefs and practices may still exist.

The approach of the Taskforce also seems at odds with the revised national competency standards issued following the recommendations of the national review.[1,2] These standards provide a comprehensive framework for assessing competence in nursing and midwifery practice in Australia. They are used by State and Territory

registration boards and councils to assess applications for license to practice, and by universities and colleges to develop nursing curricula and assess student performance. For example, the standards for the registered nurse consist of four separate domains (professional practice, critical thinking and analysis, provision and coordination of care and collaborative and therapeutic practice).[1] Competency standards for research and EBP are contained within the domain of critical thinking and analysis. The revised standards are both more specific and more demanding upon competence in EBP, including identifying, appraising, applying and evaluating evidence.[1]

2.5 Evidence for nursing practice

2.5.1 Evidence-based medicine

The classical model of evidence-based medicine (EBM) has often been equated with rational science and has previously been criticised for failing to provide a creative or dynamic schema with which to understand many aspects of clinical practice. While this focus is unintended,[22,107] the assumption that clinical care and clinical decision making are reducible and measurable using the instruments and methods of scientific research remain a contentious feature of EBM for some. Governments have also chosen to interpret what counts as evidence in a classically reductionist way, as demonstrated by research funding and assessment criteria.[31,108]

For nursing, the elevation of certain study designs such as the randomised controlled trial (RCT) and meta-analyses were (and still are) seen as narrow methodological approaches that ignore the

theoretical and practical base of nursing, as well as other implicit factors such as the characteristics of the patient and the context of care.[109-12] While I do not believe that nurses disagree with the principle that multiple RCTs provide the best quality evidence to judge the effectiveness of a treatment or intervention, it is my view that nurses do not generally accept that research alone should dictate a nursing action, and do not fully understand the concept of matching clinical questions to appropriate evidence sources.

Hierarchies of evidence often relegate to lower order that knowledge which has been described by Straus and McAlister[113] as 'replicated' – or that knowledge derived from the consensus of respected opinion leaders. EBM has been dismissed as an inappropriate model for knowledge transfer in clinical nursing practice, leading to the type of question posed by Walker[114]: 'is it really best for nursing to be quite so speedy to welcome its [EBM] supposed benefits and rewards?' Concurrently, the focus of political and financial interest has been on the potential for EBM to improve effectiveness. In discussing the situation in the United Kingdom, Harrison[115] alleges that EBM provides a convenient solution to the rationing of healthcare, maintains the medical profession's monopoly in clinical decision making and entraps the public by appealing to a collective quest for 'science' or 'truth'.

While debate on the value of EBM continues,[116-8] the wider application of EBM theory continues to parallel global dilemmas in healthcare such as escalating costs; workforce shortages; critical scrutiny of resources; knowledge of care delivery; demand for patient safety; and

the positioning of the patient at the centre of care.[119] The most recent edition of the popular handbook *How to practice and teach EBM* reflects the increased participation of health disciplines in evidence-based care through an expanded definition of EBM. The first edition published in 1997 defined EBM as 'The conscientious, explicit and judicious use of current best evidence in making decisions about the healthcare of patients'.[120] In the 2005 edition, the definition of EBM is 'the integration of the best research evidence with our clinical expertise and our patient's unique values and circumstances'.[121] This definition reflects the broader contextual field of EBM in regard to the individual clinical state as well as recognizing variation in the clinical setting.[121]

EBM entered the vernacular of Australian health care in the early 1990s, lead by the growing movement in Canada and the United Kingdom. By 1995 the National Health and Medical Research Council (NHMRC) of Australia had issued a handbook *Guidelines for the development and implementation of clinical practice guidelines*.[18] This was intended to spearhead the integration of evidence into practice through the use of evidence-based guidelines. This publication articulated important principles underlying the guideline development process and proposed an adaptation of the quality of evidence ratings table (originally developed by the US Preventative Services Task Force) for assessing the strength of evidence in support of guideline recommendations (Table 1.1, *Chapter 1*). Variations on the quality of evidence ratings became commonplace in the literature and such scales were widely adopted as a standard for grading the

strength of evidence in different types of studies. By 1999, the NHMRC had issued another booklet in the guideline series entitled *A guide to the development, implementation and evaluation of clinical practice guidelines*,[31] in line with the increased profile of evidence-based guidance in clinical care.

A number of resources have been developed to assist with the practical aspects of bridging the gap between evidence and practice in Australia. One example is the National Institute of Clinical Studies (NICS), which was established by the Australian government in December 2000 to identify where gaps in current evidence exist, raise awareness of these gaps, and support health professionals to understand and overcome the barriers to applying evidence in the Australian healthcare setting. Another notable example is a project designed to bring evidence to the point-of-care (the Clinical Information Access Program or CIAP). CIAP commenced in NSW in 1997 and at the time was touted as the largest online clinical evidence service in Australia and internationally. CIAP continues to provide practicing clinicians and consumers of healthcare with online access to the Cochrane Library, reference books, online journals and many other forms of clinical evidence and evidence summaries.

2.5.2 Evidence-based medicine or evidence-based practice?

The literature is so replete with definitions of EBM that an original proponent of the movement has concluded that the very name has become an impediment to getting the main concepts across.[122] However, the contribution of consumers, managers, policy makers

and other health disciplines to EBM has heralded a broadening of EBM concepts and principles.[123] This is consistent with the adoption of more generic labels to describe practice based on evidence, such as evidence-based healthcare and evidence-based practice. Still others in the health professions prefer to maintain their own uni-professional 'brand' of evidence-based practice, adopting the terms evidence-based dentistry, evidence-based nursing, evidence-based mental health, evidence-based policy and evidence-based management, to name a few. Accompanying the introduction of each of these new brands has been more definitions, more hierarchies of evidence and more detailed identification of barriers to the implementation of this evidence, all interpreted according to the various epistemologies and priorities of the professions who have named them.[124] A consensus statement issued on behalf of delegates at the second international conference of Evidence-Based Health Care Teachers and Developers in 2003 proposed adoption of the term evidence-based practice (EBP) to reflect the broader interests of health care teams and organisations in adopting a shared approach to practice based on evidence.[125]

The term evidence-based practice (EBP) is used throughout this thesis to denote practice based on evidence. When referring to the work of others, the term chosen by that author will be used.

2.5.3 Evidence-based practice in nursing

While it is now common to see the words 'evidence-based nursing' used, adoption of the more general term evidence-based 'practice' has circumvented some of the debate around definitions for EBP.

Generally, definitions of EBP in nursing are broad, such as 'the systematic interconnecting of scientifically generated evidence with the tacit knowledge of the expert practitioner to achieve a change in a particular practice for the benefit of a well defined client/patient group'.[126] This definition, like that of Straus et al.[121] assumes that nurses can and will interpret knowledge generated from research. Another definition of EBP within nursing is 'the application of the best empirical evidence [including recent research findings], to clinical practice in order to aid clinical decision-making'.[127] This definition leads one to question: what is the best empirical evidence in nursing which is *not* recent research findings? This is one of the questions explored in this thesis.

While there has been an explosion of international literature around EBP in nursing over the past ten years, a large bulk of this work relates to identifying barriers.[9,10,128-33] It is not my intention to reiterate these already well publicised findings in detail. However, a summary of the barriers to evidence implementation in nursing are known to include:

- scientifically based research in nursing is scarce (there is a lack of evidence from research)
- development of a research culture is a relatively recent advance in nursing (nursing has been an academic discipline for a relatively short time and lacks a skill-base and track record in research)
- organisational arrangements do not support nursing research (lack of role models and leaders in research in clinical nursing)
- nursing is seen as a practice discipline (knowledge from experience is valued)

- time and sources of funds for nursing research are limited (due to all of the above).

As described in the chapter overview, French[46] has identified three broad contextual factors that influence research use in nursing and therefore EBP. These are the physical, social and organisational contexts of care. The physical context relates to clinical factors such as nursing specialty, length of experience in nursing and the degree of autonomy permitted by the role.[134] For example, a nurse practitioner working in a remote location will make clinical decisions differently from a nurse working in the intensive care unit of a city teaching hospital. The social context refers to the preferences, beliefs or working practices of nurses and other groups involved in healthcare delivery. In the case of clinical nursing, this context will often relate to relationships with managers and medical staff[135] but may also include factors such as self-confidence and feeling empowered to make clinical decisions.[136,137] The organisational context relates to the internal politics of the organisation and the various agendas that stakeholders (including nurses) pursue in making healthcare and policy decisions.[138,139] A Cochrane review initiated by Foxcroft and Cole[140] was unable to find sufficient quality evidence to determine which organisational factors are the most important for developing evidence-based nursing.

There are few studies (either in Australia or internationally) that explore the relationship between educational programs and research utilisation (Section 2.4). There has been an assumption in educating health professionals that teaching EBP skills will lead to improved

patient outcomes, but there is currently no evidence for this.[141] Fritsche et al.[142] suggest that a positive impact on patient outcomes can only be achieved if the training improves EBP knowledge and skill, and these skills are able to be translated into clinical decision-making. However, the small numbers of overseas studies that have measured EBP knowledge and skill among nurses[15,143] have found these skills to be lacking. There is also evidence that few Australian nurses (including academics) are publishing research papers in refereed nursing journals,[13,14,144-5] raising questions about the amount of nursing knowledge that is being generated by Australian nurses for EBP in Australian nursing.

Other aspects of EBP that have been studied in the Australian nursing context include the evaluation of an integrated information literacy program in a nursing curriculum to develop skills in locating and retrieving literature,[7] and the use by nurses of online clinical evidence as measured by knowledge and use of the NSW Clinical Information Access Project (CIAP).[8] Despite CIAP being freely available to all NSW public hospital employees since 1997 (including at-home access by use of a password), in 2003 only 58% of more than 3,000 NSW nurses responding to a usage survey had heard of CIAP. In 38% of this group, knowledge of CIAP had come mostly from colleagues. Seventy percent of those nurses who were aware of the CIAP database had used it, but of those who had not, the most frequent reasons were lack of training (63%) and lack of time (39%).[8]

While nurses' use of online evidence has increased from that found in a previous study by the same group,[146] it was mainly the senior nurses

(categorised as clinical nurse consultants, nurse managers and nursing unit managers) who were using CIAP for clinical activities such as reviewing policies. Senior nurses felt encouraged to use this resource, whereas employer support was less positively perceived by other clinical nursing staff that had lower usage patterns. Use of CIAP has been found to be as dependent upon the social and cultural influences of the professional group as on technical ability.[147] There was a low reported use of CIAP for clinical decision making across all nursing roles, with evidence that nurses use CIAP more as an electronic library for professional development or study purposes than for making clinical decisions.[8]

Nurses appear to have been further hampered in their development towards EBP by an inability to agree on what kind of evidence is relevant to nursing practice.[148,149] While much is written about barriers to the implementation of research into clinical care, such studies often assume a common understanding of evidence and a baseline level of EBP knowledge and skill. In contrast, this thesis proposes that individual perceptions of evidence and different levels of knowledge and skill for EBP may be contributing to the variability with which evidence is accepted and used in nursing. The fact that nurses continue to use interactions with colleagues as a primary source of practice knowledge[10,16,150] only emphasises the need for more leaders of EBP in nursing – be they called evidence champions, role models, knowledge brokers or whatever.

2.5.4 The future of EBP in nursing?

This thesis explores the assumption that nurses share a common understanding of evidence and that they are both engaged with, and sufficiently skilled to interpret and implement evidence into their daily practice and/or teaching. Currently, there are many more problems identified for EBP in nursing than solutions offered, and it is sometimes easier to dwell on the historical and situational reasons for this than to move forward. It has been suggested, for example, that nursing models derived from out-of-date discredited theories borrowed from other disciplines maintain the illusion of nursing as a strong, autonomous discipline, when in reality, disunity in the profession renders it vulnerable to externally imposed political and sociological fashions.[151] Littlejohn argues[151]:

> The age-old question of exactly what it is to be a nurse has not yet been answered in any way that even remotely approaches a consensus. Nursing has never been, and at present is not, a unified, rigorous, science-based profession. It is continually beset by disagreement about its true nature. There exists a true possibility that it will never be a unified, rigorous, scientific discipline. Government and health service managers cannot continue to demand that nursing act as a scientific, evidence-based profession, while simultaneously hamstring it with imposed frameworks [nursing models] that are non-scientific, non-experimentally tested and non-evidence-based. (p.41)

The introduction of the nurse practitioner (NP) role in NSW again provides a useful illustration in this regard.[152] When NP legislation was first passed in NSW in the late 1990s, aspects of the process were devolved under the Act to the NSW Nurses Registration Board and the NSW Department of Health. One of these was a mandatory

requirement that prior to commencing in their role; authorised NPs must submit evidence-based clinical practice guidelines articulating their scope of practice. This requirement had largely been imposed to counter some very vocal disapproval from sectors of the medical profession. Guidelines were first to be approved by all local stakeholders and then submitted to the highest level of the Health Department (the Director-General, NSW Health), who then sent the guidelines for review by an external multidisciplinary panel.

As the successful project tenderer for the external review of NP guidelines, I had selected the AGREE guideline appraisal instrument for this purpose.[32] Each NP guideline underwent appraisal by a six-member multidisciplinary team who were first vetted by the Health Department. Very few of these early NP guidelines were of sufficient quality to pass the level of critique suggested by the AGREE instrument. High quality evidence (as determined by NHMRC standards) was lacking for nursing practice. Despite calls from the NSW Chief Nurse for the local adaptation of already developed and validated guidelines, the professional silos that exist within nursing supported many NPs to write guidelines themselves 'from scratch' or to use evidence in guidelines that was of limited credibility to other professions (especially to medicine). Although NPs are advanced nursing professionals with recognised expertise in a clinical specialty, many were initially unprepared for the academic requirements of their authorisation.[54] For a number of years, the mandatory evidence-based guideline requirement became yet another barrier to the implementation of NP positions in NSW. Six years after the

introduction of NP legislation in NSW, only 12 of 57 authorised NPs had clinical guidelines that had been formally approved by the Director-General of Health, and the rest continued to work under standing orders. This cumbersome and professionally demeaning process has since been revised, with the approval of evidence-based guidelines now occurring at organisational level.

2.6 Chapter summary

This review of the literature around the context of Australian nursing and nurse education reveals that the current face of clinical nursing is one in which academic and practical skills co-exist in a workforce that is partially university trained and partially reliant upon an important (historic) collective experience. The teaching of research skills in undergraduate curricula is likely to depend upon the background and experience of the lecturer, and there is a lack of evidence on which to base informed decisions about Australian nursing curricula in general. The research utilisation literature is consistent in reporting that the acceptance of EBP in the clinical setting is dependent upon context, including the expectations and perceptions of nurse managers, leaders and co-workers. Historically, these factors have contributed to an inconsistent level of support for EBP. Despite a lack of research in this area, the variable preparation of undergraduate students for EBP may also be impacting upon the perceived ability of clinical nurses to use research in their practice.

There have been pleas for nursing to own and articulate the evidence used in nursing practice. Where this evidence does not conform to

(current) EBM definitions, Rycroft-Malone et al.[149] suggest that nursing needs to describe and test this evidence for robustness (both on its own and in combination with other the sources of evidence that are melded together) in 'the real-time of clinical decision-making'. In relation to research education, a number of frameworks have been proposed to integrate EBP into education and practice,[11,12,107,153] but only one offers a benchmark for the integration of EBP into the current Australian undergraduate nursing curriculum.[6]

In summarizing, it is important to recall that EBP and research are not the only things competing for attention within the nursing curriculum. Nursing is a practice-based discipline and nurses must learn the skills of safe nursing practice as well having the opportunity to develop these skills during clinical placement. Preparation for what may be perceived as less important and certainly less tangible skills such as cultural sensitivity, communication, and EBP compete for time and attention in an already packed curriculum.

Contemporary healthcare demands efficiency, effectiveness and safety, with placement of the patient/client at the centre of clinical decision making. As the concepts of clinical governance permeate healthcare, there will be increasing demands on all health professionals to be more accountable for their practice. Nurses constitute the largest proportion of the health workforce in most developed countries. Nurses therefore have a significant collective potential to lead a challenge towards a more efficient, effective and safe healthcare system. The principles of EBP are appealing in this context. There is evidence of support for EBP in nursing, but are

nurses in NSW, Australia ready to use this evidence in their practice? The next chapter presents the method and results of the first study conducted for this thesis: a survey of NSW nurses' attitudes, skills and knowledge for EBP.

Chapter 3

Evidence-based practice and NSW nurses: Results of the survey

3.1 Chapter overview

The review of world literature in *Chapter 2* indicates that nurses have a welcoming and supportive attitude towards the concepts of evidence-based practice (EBP). However, similar to other health professionals, nurses' abilities to integrate the principles of EBP into their work are likely to be influenced by a number of personal and contextual factors. One of these is the assumption that the language and concepts of EBP can be universally applied to a profession such as nursing that holds various definitions of evidence.

The context of nursing is one in which workforce and workplace culture and demands, different definitions of evidence and EBP, and variable preparation in EBP skills are serious obstacles to the development of evidence-based nursing practice. However, an even greater obstacle may be to assume that clinical nurses have an underlying basic level of knowledge and skill for EBP that serves as a foundation for their ongoing development as an evidence-based practitioner. In recommending appropriate educational interventions for the development of EBP in nursing, the study reported in this chapter aims to explore the research questions:

1. What do nurses in NSW understand as evidence for evidence-based practice?

2. What level of knowledge and skill do NSW nurses have in regard to the concepts of evidence-based practice?

A survey entitled *Nurses' Perceptions of Evidence-based Practice* was completed by 126 currently practicing nurses who were undertaking post-registration courses through a nursing college in 2002/03. The same survey was completed by 257 final year nursing students (pre-registration) who had enlisted with a recruitment agency for assistance with job placement prior to graduation in 2003. This chapter looks at the method and results of the survey. It describes the baseline level of knowledge and skill for EBP among 383 nurses in New South Wales. Further, it explores these nurses' attitudes towards evidence and EBP and asks them to describe what they understand the word 'evidence' (in evidence-based practice) to mean.

3.2 Survey Design and Method

New South Wales (NSW) nurses' knowledge and attitudes towards EBP were examined using a self-complete, voluntary, anonymous postal survey distributed to working clinical nurses (post-registration) and final year nursing students (pre-registration).

The aim of this survey was to address the research questions:

1. What do nurses in NSW understand as evidence for evidence-based practice?
2. What level of knowledge and skill do NSW nurses have in regard to the concepts of evidence-based practice?

3.2.1 Development of the survey

In 1998, McColl et al.[34] reported the findings of a study that aimed to determine the attitudes of general practitioners (GPs) towards EBM and to elicit their related educational needs. While there are no published data on the reliability or validity of this survey instrument, adaptations have since appeared throughout the literature, including Young et al.[154] and Askew et al.[155] reporting on GPs in NSW and Queensland, respectively. Dr Alastair McColl gave permission for replication of the survey (by email communication), with the resulting amended version used in this study titled *Nurses' Perceptions of Evidence-based Practice* (the survey) shown in Appendix B.

The survey was modified so that the words 'evidence-based medicine' were replaced with 'evidence-based practice' and 'general practice or practitioners' were replaced with 'nursing practice or nurses' throughout. Discrete sections within the questionnaire cover attitudes, literature searching and appraisal, familiarity with the terms and language of EBP, and a section seeking demographic information. Items on the questionnaire consist of visual analogue scales for determining attitudes, closed questions to assess levels of awareness and use of resources for literature searching, and free text sections for comment on practice changes and/or barriers to EBP. In order to specifically determine what NSW nurses understand as 'evidence' for evidence-based practice (the first research question), these words were added to the survey in the form of a single open-ended question. This appears as Question 8 in the survey at Appendix B.

Additional questions

A qualitative investigation into the organisational competencies required for the adoption and implementation of evidence-based healthcare in UK Trusts[143] had reported that nurses and midwives showed a serious lack of proficiency in many of the essential building blocks of EBP. These building blocks were: the formulation of focused clinical questions, the choice of appropriate information sources, and familiarity with electronic databases.

Three sets of scales from the UK study[143] were added to appropriate sections of the adapted McColl et al. survey.[34] The scales require a self-rating of ability with respect to searching literature and electronic databases and critical appraisal skills. The three sets of scales include between five and ten items measured on a five-point Likert scale. On the scale, '1' indicates 'very little or no ability' and '5' indicates a 'good level of ability'. These additional self-rating scales can be found as Question 19, 20 and 26 on the survey in Appendix B. Newman et al.[143] reported their results as an average of the self-rated scores. For their study, a mean score of 3.0 was chosen to indicate an 'adequate' level of skill. Replication of the self-rating scales in the survey in Appendix B permitted simple comparisons to be made between the responses of nurses from the UK study and those of nurses from NSW. A question from the UK Trust study on professional literature was also added (as Question 21), as the authors had reported that nurses and midwives were mainly reading 'non-scientific' literature (defined as monographs, nursing and professional journals).[143]

Piloting

The final survey was piloted with 50 students attending post-registration education courses at a professional nursing college in NSW, Australia. No major changes to the survey were required following piloting. Apart from minor differences in past or present tense, the survey sent to post-registration nurses was identical to that sent to pre-registration nurses (for example, the question 'What year did you register as a nurse? or 'What year do you expect to register as a nurse?').

3.2.2 Sample and Survey Distribution

The final document was designed as a self-complete, voluntary, anonymous postal survey. The survey was presented as part of a package which contained a letter of introduction, the survey, an opt-out sheet and a reply paid envelope. These were enclosed in a bright yellow envelope with a sticker in large print on the outside. Each item within the package was printed on different coloured paper to stimulate interest in the contents. The letter (on floral paper) introduced the researcher and the aims of the survey. It gave brief instructions, explained the individual's right to refuse to participate – including protection from disadvantage by choosing not to complete the survey – and it promised strict adherence to anonymity. The survey (Appendix B) was printed on pale yellow paper. A single page opt-out sheet on bright orange paper located inside the front cover of the survey asked those participants who elected not to complete the

survey to indicate why. There was space to record their reason(s) or they could choose from the following options:

I have simply chosen not to complete the survey because:

- I am sick and tired of surveys
- The topic is unfamiliar to me
- Surveys never change anything
- I am just too busy for this

Return of the completed survey was regarded as consent to participate. Due to privacy regulations on student mailing lists in NSW, no direct follow-up was possible with potential respondents. Reminders to return the survey were placed in College newsletters (for post-registration nurses) and on the website of the NSW New Graduate Recruitment Consortium (the Consortium) through which pre-registration nurses had been contacted. Surveys were returned directly to the College.

Post-registration nurses

The term 'post-registration' is used for all nurses in this sample as it includes those who are currently registered and working as nurses in NSW: i.e. nurses who have completed a tertiary-level nursing course (post-graduates), as well as those who originally trained in a hospital-based apprenticeship program. While most in this latter category are likely to have converted their registered nurse qualification to a degree or diploma at some point during their career, their educational pathway is different from that of those completing three-year undergraduate nursing degrees. The purpose of sampling post-registration nurses was to explore knowledge and attitudes towards

EBP in what may be regarded as a group of experienced clinical nurses who are representative of the current NSW nursing workforce.

The College of Nursing (incorporating the NSW College of Nursing) annually enrols more than 7,000 post-registration nurses from NSW, and a small proportion (2%) from other states of Australia and overseas. The College offers graduate certificate, continuing education and other customised education in the face-to-face and distance modes. Some courses are full fee-paying while others are subsidised by state health authorities and/or the students' workplace. With the exception of overseas qualified nurses and midwives, and those undertaking refresher courses (to rejoin the workforce), most students will be working in nursing while undertaking their study program. Students of the College therefore represent a broad range of currently working nurses from both the public and private sector and metropolitan, rural and remote areas of NSW. Collectively, nurses studying at the College have both generalist and specialist expertise across a range of clinical areas.

During 2002 and 2003, the College offered an average of 52 continuing education courses per year in the distance mode, with four enrolment dates per year for each subject. A wide range of clinical and management subjects were offered. An immunization course for registered nurses was offered monthly throughout this period and was the most popular course. This was related to a concurrent change in nursing legislation which required all nurses who give immunizations to be accredited. During these two years, continuing

education by distance was the mode of choice for 22% of the total number of students enrolled at the College.

The survey *Nurses' Perceptions of Evidence-based Practice* was posted to a total of 677 students who were commencing continuing education by distance courses at the College during two intake periods (May–July 2002 and December–March 2002/03). In the first phase (May–July 2002), either a gourmet-style teabag or a scratch lottery ticket to the value of $1.00 was included in the survey package. Following a poor response (with no difference between which token was offered), the introduction letter was modified to adopt a friendlier and more informal style in the second posting phase (December 2002–March 2003) and an opt-out sheet was included to determine why nurses were not responding.

Pre-registration nurses

The term 'pre-registration' is used to describe the sample of nurses in this study who were either sitting final year examinations, or were waiting for final results from universities or colleges in order to complete nursing registration with the statutory authority responsible for the registration of registered and enrolled nurses in NSW (the NSW Nurses and Midwives Board).

This sample was drawn from all third-year nursing students who made an application to the NSW New Graduate Nurse Recruitment Consortium (the Consortium) in 2003 for placement into a registered nurse position following their graduation and registration. Applications received for the 2003 recruitment year indicate that

66.5% (1275/1914) of all final year nursing students or graduates from NSW universities applied to the Consortium for placement. The registration form for the Consortium includes a tick box for applicants to 'opt-in' for the purposes of participation in research. In 2003 the actual number consenting to participate in research was 1134, representing approximately 60% of all nursing students from the nine universities and one college in NSW offering an undergraduate nursing program at the time of the study.

The Consortium agreed to facilitate distribution of the *Nurses' Perceptions of Evidence-based Practice* survey to these 1134 members in late September 2003. This was timed to coincide with other activities of the Consortium such as interview notifications, and aimed to capture students prior to their exiting the university system and commencing work. The survey package was distributed as a separate mail-out on a cost recovery basis. Prior to distribution, the survey was advertised on the Consortium's website and various key interest groups around Australia were notified about it via their email list to elicit their support of student participation.

These two groups, post-registration nurses from the College of Nursing and pre-registration nurses from the NSW New Graduate Nurse Recruitment Consortium, comprise the study population. Conduct of the survey was approved by the institutional ethics committees of the College of Nursing (incorporating the NSW College of Nursing) and the Human Research Ethics Committee of the University of Sydney. Permission to access clients of the Consortium (pre-registration group) was granted by their Steering Committee.

3.2.3 Analysis of survey

Data were entered into a Microsoft Excel® spreadsheet and exported to the statistical package SPSS®[156] for analysis. Simple descriptive statistics (frequencies and percentages) were calculated to describe the samples, with means and standard deviations calculated for all scales (ten-point Likert scales measuring attitude items and five-point Likert scales measuring EBP skills). Chi square analysis was used for the comparison of categorical data obtained from the 'Yes/No' type questions.

As the sample of College (or post-registration) nurses was made up of both hospital-trained and university prepared nurses, results are stratified for some items producing three samples for comparison: pre-registration, post-registration (hospital-trained), and post-registration (university prepared). Analysis of variance analysis (ANOVA) was used to determine if statistically significant differences were present between the mean scores of the three groups. Mean differences between groups were then tested for significance using a Students t-test (with Bonferroni correction for multiple comparisons).

Responses to Question 8 of the survey (an open-ended question on nurses' understanding of evidence) were transcribed verbatim and subjected to a thematic analysis. The initial analysis permitted the identification of categories which were summarized onto a coding sheet. Two independent raters then coded data (responses) under the identified categories, identifying new categories if they felt data were not adequately represented in the list. Initially, 11 categories were

identified. After consultation and discussion between the raters, these were later collapsed into eight categories representing seven broad themes and a mixed category for 'other'.

3.3 Survey Results

3.3.1 Survey respondents

Collectively, a total of 383 useable surveys were returned. This represented a combined response rate of 21%. As the samples were selected to represent two distinct profiles – experienced members of the nursing workforce (post-registration nurses) and final year nursing students (pre-registration nurses) – respondent characteristics are outlined separately below.

Post-registration nurses

A total of 126/677 (19%) registered nurses undertaking post-registration education courses at a nursing college in NSW completed and returned the survey. In the first phase (May–July 2002), the response rate was 18% (57/323). In the second phase (December 2002–March 2003) 69/354 surveys were returned and 13 opt-out sheets, a 23% (82/354) response rate. The most common reason given for opting out (n=8) was unfamiliarity with the topic of the survey. With the exception of one participant who was looking for work, all were currently working as nurses within NSW. For post-registration survey respondents, 69 (55%) had received their basic nursing training in a hospital program and 57 (45%) at a university. Because of differences in their demographic profile, the sample of post-registration nurses is divided into 'hospital trained' and 'university prepared' to describe

their specific characteristics. The hospital trained nurses had been registered for 25 years (on average), while university prepared nurses had been registered for an average of only eight years.

The demographic profile of the post-registration sample is shown in Table 3.1. In the Table, the study sample is compared and contrasted to the entire population of Australian nurses as described in the Australian Institute of Health and Welfare national report on the nursing labour force in 2002[157]. The sample is also contrasted against features of the local NSW nursing workforce as described in the 2002 annual profile issued by the NSW Health Department.[158] There is some variation in the way national and state authorities collect data on registered nurses in Australia, but those data that can be compared are presented. For example, the national data[157] records the number of nurses aged under 35 years, while state data[158] records the number of nurses aged under 40 years. The table shows that the samples of survey respondents in this study were younger than the average Australian or NSW nurse, and were more likely to be female.

Table 3.1: Profile of post-registration survey respondents

	Registered Nurses in Australia[157] in 2002	Registered Nurses in NSW[158] in 2002	All post-registration students responding to survey in 2002/03	Post-registration students responding to survey in 2002/03 by nurse training method	
			Combined	**Hospital trained**	**University prepared**
Number	209,109	72,799*	126	69	57
Employed in nursing (%)	183,225 (88%)	60,309* (82%)	125 (99%)	68 (99%)	57 (100%)
Age <35 or <40 yrs (%)	25% <35	33% <40	51% <40	18% <40	90% <40
Male (%)	8.6	8.1	4.0	4.3	3.5
Main Role (%) Either Registered Nurse or Certified Midwife	ND	67	74	69	80
Work Location (%)					
Metropolitan	66	73	50	45	56
Rural/regional	32	26	43	51	33
Remote	2	1	7	4	10
Workplace (%)					
Hospital or facility	64	70	71	62	82
Community or clinic	ND	ND	23	29	16
Completed post-registration nursing course (%)	ND	64	100	100	100
Initial nursing registration prior to 1984 (%)	ND	53.8	49.2	99#	0

Notes: * figures adjusted for non-response in report
ND no comparable data available
missing data for overseas qualified student

The Table also indicates that more of the hospital trained nurses were working in community settings or clinics (29%), compared to the younger university prepared group (16%). In comparison to the entire Australian nursing population, survey respondents were more likely to be working in rural or remote areas of NSW. This is consistent with

the profile of all College students undertaking continuing education by distance, for which overall only 29% are from metropolitan NSW, 49% from country NSW and the remaining 22% are from interstate or overseas.[159]

Pre-registration nurses

A completed survey was returned by 257/1134 (23%) final year students graduating from a NSW university in 2003. A further 45 returned opt-out sheets indicating they were either too busy to complete the survey (n=26) or were unfamiliar with the survey topic (n=20); respondents could choose more than one response. Five surveys were returned incomplete and were discarded.

Twenty-two of the pre-registration respondents were male (9%), 225 were female and 10 did not respond to this question. Seventy-three percent were under 30 years of age, while 22 (8%) were over 40 years. Table 3.2 contrasts the profile of the pre-registration sample with data from government collections on all university graduates[160]; the population of all New Graduate Consortium clients; and that of a representative student nurse group[92] graduating in 1997.

Table 3.2: Profile of pre-registration survey respondents

	Profile of all nursing graduates in NSW	Final year students registered with New Graduate Consortium in 2003	Pre-registration students responding to survey in 2003
Number of nurses expected to graduates 2003	1914[iv]	1134	257
Age <30 yrs (%)	87[v]	ND	73
Male (%)	15[vi]	12	9
Employed in nursing role prior to graduation (%)	60[vi]	ND	34

ND = no comparable data available

In the left column, data from these different sources are combined (as indicted by footnotes) for the comparison between all nursing graduates in NSW and the study sample. Of 493 registered nurses commencing work in NSW in 1997, the percentage of male respondents was 15%, and 87% were 30 years of age or younger.[92] Table 3.2 indicates that the sample of pre-registration nurses responding to this survey were slightly older and included more females than might be expected in a sample of recent graduates.

While the final year students responding to the survey were not yet working as nurses, 43% anticipated that their future nursing practice

[iv] NSW New Graduate Recruitment Consortium. South Western Sydney Area Health Service. Dolls Point, Sydney: November 2003.
[v] Commonwealth Department of Education and Training. *Which Course? Which University? Undergraduate Characteristics 2003 – Health*, Canberra: 2004[160]
[vi] NSW Nurses Registration Board. *Project to examine expectations of beginning registered nurses in the workforce 1997*. Sydney: 1997[92].

would be conducted mainly in a metropolitan area of NSW, with 17% expecting future practice to be within a rural area. More than 50% indicated that they expected to work initially within a hospital or facility, as compared to working within a clinic or in the community, and a further 40% chose not to speculate on their future place of work. Respondents were invited to give their current professional working title on the survey. Eighteen (7%) indicated they had already gained registration as a nurse, 47 (18%) described themselves as assistants in nursing (unlicensed healthcare personnel) and 21 (8%) gave their working title as enrolled nurse. Consistent with these findings, nine respondents indicated previous training in a hospital or technical college and 22% had gained qualifications in areas other than nursing (including 17 with non-nursing Bachelor degrees, one with a graduate diploma and one with a Masters level qualification in dentistry).

3.3.2 Attitudes to Evidence-based Practice

As can be seen from the survey in Appendix B, a number of items measuring attitudes towards EBP are presented as a ten-point rating scale. Scores anchored at '1' represent a positive response (extremely welcoming, extremely useful, strongly agree) and those anchored at '10' represent a negative response (extremely unwelcoming, not useful or strongly disagree). Nurses graduating in 2003 (pre-registration) had a very welcoming attitude to EBP (81% selected a score of '4' or less on the ten-point scale) and described the attitude of nursing colleagues to EBP as also welcoming (54% selected '4' or less). The majority of the pre-registration nurses (81%) thought research findings were useful in their everyday activities, with 17% of these

rating research as extremely useful (scoring '1' on the ten-point scale). There was high agreement with the statement that "implementing evidence-based practice improves patient care" (41% scored '1' on the ten-point scale while a cumulative 94% scored '4' or less). Pre-registration nurses generally disagreed that EBP is of limited value in nursing because much of nursing care lacks a scientific base (25% strongly disagreed by scoring '10', a cumulative 84% scored '6' or higher). Only 38% (scoring '4' or less) indicated that the adoption of EBP places further demands on already overloaded nurses.

For attitude items, lower mean difference scores indicate more positive attitudes. Using pre-registration nurses as the reference group, means for post-registration nurses (university prepared or hospital trained) are subtracted to calculate the mean difference in attitude scores across the three groups of respondents (Table 3.3). A positive mean difference indicates that the mean score for the post-registration group is lower than the mean score of the pre-registration group and therefore indicates that post-registration nurses have a more positive attitude to EBP. A negative mean difference indicates a higher mean score for the post-registration group and therefore, a less positive attitude than the pre-registration group. Identical mean scores will give a value equal to zero.

The prevalence of negative mean scores in Table 3.3 indicates that, overall, the pre-registration nurses have a more positive attitude towards EBP than the post-registration group. There were no significant differences between the mean attitude scores of NSW nurses with regard to welcoming EBP. However, pre-registration

nurses were significantly more likely to view their colleagues as welcoming towards EBP than nurses who trained in hospitals (mean difference -0.6, p=0.04, 95%CI -1.21, -0.03) and were less likely to think that EBP is of limited value in nursing than this group (mean difference 0.84, p=0.01, 95%CI 0.15, 1.54).

Table 3.3: Mean difference between NSW nurses EBP attitude scores

	Post-registration comparison group *Hospital trained n=69* *University prepared n=57*	**MEAN DIFFERENCE** ***Pre-registration MINUS Post-registration***	*p-value*	*95% confidence interval*
EBP is of limited value in nursing	Hospital Trained	0.84	0.01*	0.2, 1.5
	University Prepared	0.41	0.56	-0.3, 1.2
I welcome the promotion of EBP	Hospital Trained	-0.36	0.43	-0.9, 0.2
	University Prepared	-0.47	0.21	-1.1, 0.2
My colleagues welcome EBP	Hospital Trained	-0.62	0.04*	-1.2, -0.03
	University Prepared	-0.44	0.31	-1.09, 0.2
Research is useful in my practice	Hospital Trained	-0.34	0.45	-0.9, 0.2
	University Prepared	0.0	1.0	-0.6, 0.6
Implementing EBP improves patient care	Hospital Trained	-0.82	0.001*	-1.3, -0.3
	University Prepared	-0.72	0.004*	-1.2, -0.2
EBP places extra demand on nurses	Hospital Trained	0.81	0.07	-0.4, 1.66
	University Prepared	0.82	0.95	-0.1, 1.8

*significant at p<0.01 compared to pre-registration group

Overall, pre-registration nurses were significantly more likely than both the university and hospital trained nurses to believe that implementing EBP improves patient care ($F_{2,380}$=11.17,p<0.001).

Three definitions of EBP were given on the front page of the survey (Appendix B). These were intentionally broad as they were not intended to impose a definition of EBP on respondents but rather to orient them to the topic and to stimulate their thought. These reflected a range of definitions present in EBP literature at the time:

> **Evidence-based practice (EBP) has been variously defined as:**
>
> a. An approach to practicing healthcare in which the clinician is aware of the evidence in support of his or her clinical practice and the strength of that evidence.
> b. The process of systematically finding, appraising and using contemporaneous research findings as the basis of clinical decisions.
> c. The conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients.

Rather than using their own definition of evidence (which is asked later in the survey), respondents were asked to use one of the above definitions to rate what percentage of their clinical nursing practice is based on evidence (survey Question 4). This question aimed to determine nurses' overall perceptions of nursing as an evidence-based discipline. While interpretation is clearly dependent upon which of the above definitions is chosen, respondents were free to select whichever was the most meaningful to them and, therefore, most likely to reflect their own perception of EBP. This same question was also asked of nursing opinion leaders during the interviews reported in *Chapter 4*.

Table 3.4 shows respondents' range of estimates for the percentage of nursing practice they believe is based on evidence (according to the

above definitions). As these are categorical data, results are summarized using the mode or most commonly occurring response category, which was 70% for both groups. However, the Table shows that responses are varied. Around 6% of the combined sample believe that very little of their practice is evidence-based, choosing either the 0, 10 or 20% category, while approximately 10% of all respondents (7% of pre-registration and 12% post-registration) believe that 90 or 100% of their nursing practice is based on evidence.

Table 3.4: Estimates of the percent of nursing practice based on evidence

	Pre-registration nurses	**Post-registration nurses**
	n=257	**n=126**
What percentage of your clinical practice do you feel is currently evidence-based?	*% of respondents*	*% of respondents*
0, 10 or 20%	5.1	6.5
30 or 40%	17.5	17.1
50 or 60%	30.7	26.8
70 or 80%	38.9	36.6
90 or 100%	7.4	12.2
Did not specify	*.4*	*.8*
MODE	**70%**	**70%**

3.3.3 What does the word 'evidence' mean to you?

In Question 8 of the survey, respondents were invited to give their own definition of the word 'evidence' in the term 'evidence-based practice'. A definition was offered by 365 of the 383 (95%) respondents. Using a qualitative approach to analyse the open-text responses, eleven separate categories were initially identified and are

given below in the first column of Table 3.5. An example of the type of response coded within each category is given in the second column using the actual words of the respondents.

Some categories represent more complex descriptions of evidence than others. For example in the initial category 1, respondents define evidence as something that has been 'tested', or 'researched', whereas in initial category 4, evidence is described as something which comes from a number of sources including research, the clinician and the patient or family.

Two independent raters allocated the coded survey responses to each of the 11 categories describing definitions of evidence. Each response was assigned to only one category. Initially there was only 52% agreement between these two ratings. However, a consistent and identifiable pattern of difference emerged on two specific items. These were between the initial category 2 (practice based on research) and category 3 (proven effective in practice). After consultation and discussion between the raters, these two categories were collapsed into one, increasing the level of agreement between raters to 71%.

Table 3.5: Respondents definitions of 'evidence'

INTIAL CATEGORIES of description for EVIDENCE	Respondents words or CODES	FINAL THEMES showing combined categories
1. Evidence results from a rigorous process	researched, tested, investigated, 'scientific', without bias, objective, sound, truth, evaluated	1. Evidence arises from a controlled or rigorous research process
2. Evidence supports practice	practice based on research, linked to practice	**2. Evidence is that which has been proven in practice to improve patient outcomes**
3. Evidence is that which is proven clinically effective	proven effective, safe, clinically proven, tested in patients, linked to improved and clear outcomes	
4. Evidence combines research, clinician and patient input	researched (formal) AND incorporates anecdotal evidence, expertise, based on real life, real patients	3. Evidence is a combination of research, clinical expertise and patient values.
5. Evidence is proof	single word used, meaning not defined	4. Evidence is proof
6. Evidence is about levels of evidence	best available evidence, different types of evidence, strength of evidence	**5. Evidence is related to method which determines the type and strength of the evidence**
7. Evidence refers to method	randomised controlled trials, statistics, trials, control groups, qualitative and quantitative	
8. Evidence is documented findings	the findings, the research, documented results	**6. Evidence is the findings of research which are of sufficient quality to be published in journals**
9. Evidence refers to published results	papers, studies, journals	
10. Evidence is validation for practice	tool to validate practice, more than 'just doing it because we have always done it that way', to justify what is being done	7. Evidence is the basis on which to justify nursing practice
11. OTHER	economic rationalism, no idea, non-committal	8. OTHER

The raters also agreed that a number of other categories could be collapsed. For example, in the initial category 7, thirteen (5%) pre-

registration and 10 (8%) post-registration respondents appeared to relate evidence directly to method (citing randomized controlled trials, qualitative and quantitative research). This was combined with category 6 (evidence defined as levels of evidence) into Theme 5 which broadly describes evidence by method.

The initial categories 8 and 9 were also combined as they refer to research being that which is documented or published. This latter category (category 9) comprised only five (2%) pre-registration and nine (7%) post-registration responses. The final seven broad themes and an eighth grouping representing a mixture of other less common responses (other) are shown in the third column of Table 3.5. Final themes which result from combined categories are shaded in column three of Table 3.5.

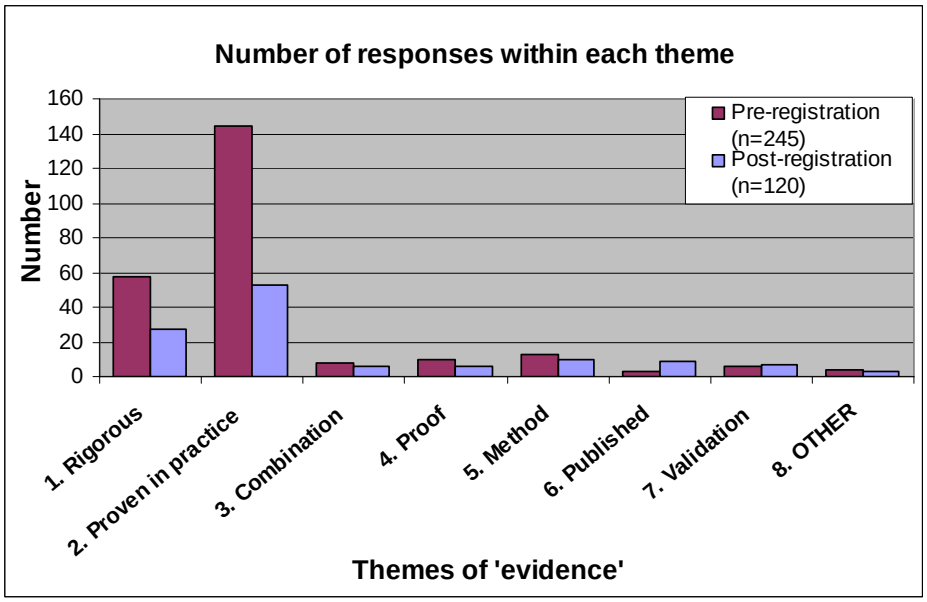
Category 10 was of particular interest because, while numbers were small (seven (3%) pre-registration and six (5%) post-registration respondents), descriptions appeared to portray that using evidence 'justifies' or 'validates' nursing practice. This seems incongruous to me. The definition of evidence for these respondents appeared to be not so much about basing practice on research, but rather, conveniently choosing research to justify or fit with what is already being done. An equally small number of respondents in both groups simply opted for the notion of evidence as 'proof': ten pre-registration (4%) and five post-registration (4%). As it is not possible to assume their meaning, or to interpret their personal description of evidence without actually asking the respondent (What is meant by proof? What is meant by validation or justification?), these categories were

not collapsed into others, but were maintained as separate themes in the analysis.

The actual number of responses within each of the final eight themes is presented in Figure 3.1. This is an average of the number of coded responses allocated by the two raters within each of the final themes. It can be seen from Figure 3.1 that two themes dominated in the descriptions of evidence offered by both the pre- and post-registration nurses. Together, 272 or 74% of all 365 responses to this question were coded within these two themes. The two dominant definitions of evidence among NSW nurses responding to this survey were:

- Evidence arises from a controlled or rigorous research process.
- Evidence is that which has been proven in practice to improve patient outcomes.

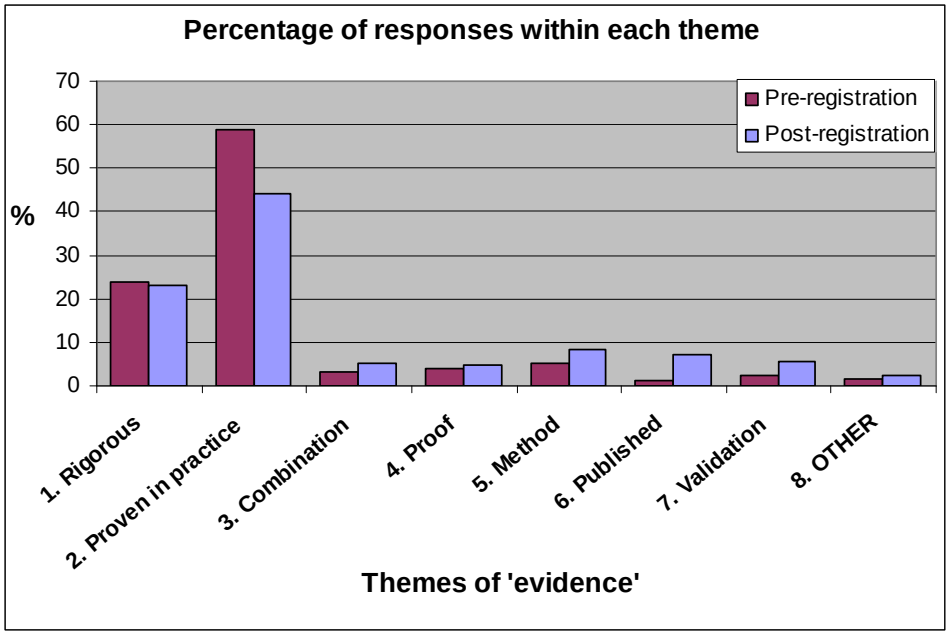
Figure 3.1: Number of responses within each theme of 'evidence'



These themes appear to represent different levels of complexity in respondents' definitions. Similarly, Theme 3 in Table 3.5 (which encompasses the notion of evidence as a combination of research, clinical expertise and patient values) appears to represent an even broader and more complex level of meaning, even though chosen by only a small number of respondents: seven (3%) pre-registration and six (5%) post-registration nurses. Importantly, respondents did not simply echo the meaning of evidence implied by the three broad definitions of EBP given on the front page of the survey and used for completing Question 4 (discussed above).

There are some minor differences in the proportion of pre- and post-registration nurses responding within each theme. Figure 3.2 shows the same data presented in Figure 3.1 expressed as a percentage of the total number of responses within each group.

Figure 3.2: Responses within each theme as a percentage of total



More pre-registration nurses gave one of the first two definitions of evidence, as observed in the raw data in Figure 3.1. However, when considered as a percentage of the total number of responses in Figure 3.2, the proportion of pre- and post-registration nurses with responses in Theme 1 (evidence arises from a controlled or rigorous research process) is approximately equal. Fifty-nine percent of pre-registration nurse survey responses to Question 8 were allocated to Theme 2 (evidence is that which has been proven in practice to improve patient outcomes), and 44% of the post-registration nurse responses. Numbers (and therefore percentages in Figure 3.2) are small within the remaining themes, but in both figures, post-registration nurses' responses were more likely to vary across these other themes.

3.3.4 Moving towards evidence-based practice

Consistent with the original study by McColl et al.[34] the survey examines how practitioners can move from opinion-based practice to EBP. The survey defines three choices for participants which represent the difference between learning the skills of 'doing' research (option a) as compared to 'using' research (options b & c).

> **Ways of moving from opinion-based practice to evidence-based practice[34]:**
>
> a. by learning the skills of evidence-based practice (to identify and appraise literature oneself);
> b. by seeking and applying evidence-based summaries which give a clinical "bottom line", such as summaries obtained from abstracting journals;
> c. by using evidence-based practice guidelines or protocols developed by colleagues or others.

More than one selection was possible and respondents were asked not only which of these methods were most familiar (Part I), but also which of these methods they regarded as most appropriate for moving to EBP in nursing (Part II). Table 3.6 outlines the results by the background of the respondent.

Part I of Table 3.6 illustrates that one half of pre-registration nurses (50%) were familiar with all three ways of changing from opinion-based to EBP. Many post-registration nurses were also familiar with all three ways (35% combined post-registration) but expressed more familiarity than pre-registration nurses with the single method proposed as option c, that is, using guidelines and protocols. This was chosen by 10% of pre- and 26% of the combined sample of post-registration nurses as the single most familiar method of moving from opinion-based to EBP.

Table 3.6: Ways of moving from opinion-based to evidence-based practice

WAYS OF MOVING FROM OPINION-BASED TO EVIDENCE-BASED PRACTICE	Pre-registration nurses	Post-registration nurses		Total Responses
	n=257	Hospital Trained n=69	University Prepared n=57	
I. Most familiar method	*Number (%)*	*Number (%)*	*Number (%)*	*Number (%)*
a. learning EBP skills	17 (7)	3 (4)	1 (2)	21 (6)
b. using evidence summaries	10 (4)	2 (3)	5 (9)	17 (4)
c. using guidelines	25 (10)	17 (25)	16 (28)	58 (15)
Combination of a&b	17 (7)	5 (7)	2 (4)	24 (6)
Combination of b&c	17 (7)	7 (10)	7 (12)	31 (8)
Combination of a&c	37 (14)	3 (4)	4 (7)	44 (11)
Combination of a&b&c	129 (50)	27 (39)	18 (32)	174 (45)
None or not specified	5 (1)	5 (8)	4 (6)	14 (5)
Total	**257 (100)**	**69 (100)**	**57 (100)**	**383 (100)**
II. Method most appropriate for nursing	*Number (%)*	*Number (%)*	*Number (%)*	*Number (%)*
a. learning EBP skills	64 (25)	13 (19)	12 (21)	89 (23)
b. using evidence summaries	49 (19)	13 (19)	7 (12)	69 (18)
c. using guidelines	112 (44)	34 (49)	25 (45)	171 (45)
Combination of a&b	1 (.3)	1 (1.5)	0 (0)	2 (.5)
Combination of b&c	8 (3)	1 (1.5)	2 (4)	11 (3)
Combination of a&c	12 (5)	0 (0)	2 (4)	14 (4)
Combination of a&b&c	8 (3)	2 (3)	6 (11)	16 (4)
None or not specified	3 (.7)	5 (7)	2 (3)	10 (2.5)
Total	**257 (100)**	**69 (100)**	**56 (100)**	**382 (100)**

Perhaps not surprisingly, using guidelines and protocols based on evidence (option c) was also seen as the most appropriate method for

moving nursing from opinion-based to EBP (part II, Table 3.6). Forty-five percent of all respondents (pre- and post-registration) selected this option. There was less support for learning the skills of EBP (option a), chosen by 23% of the total sample, or for using evidence summaries (option b), chosen by 18% of the total sample. There was little difference between the pre- and post-registration nurses in determining that guidelines and protocols are the most appropriate method for moving nursing from opinion-based to EBP. Similarly, combined methods were not highly rated by either group for this purpose.

Recall of attendance at courses related to EBP was low. Overall, 66% of respondents stated they had not attended any course or courses related to EBP. This included 64% of the final year students and 75% of the university prepared post-registration group. Of those 34% who stated they had attended a course or courses related to EBP, final year students recalled this from undergraduate study, while post-registration nurses recalled this from post-registration courses. None of the post-registration group recalled any EBP education from the clinical setting or from pre-registration training.

3.3.5 Literature searching and finding evidence

Most pre-registration nurses (91%) stated that they had conducted a search of the literature but only 74% claimed to have received any formal training in this. Of the post-registration nurses, only 43% of hospital trained and 61% of the university prepared group claimed to have received any formal training in literature searching.

In terms of searching electronic databases, nearly all pre-registration nurses (96%) had heard of MEDLINE (a medical citation index) and CINAHL (Cumulative Index to Nursing and Allied Health Literature). Two-thirds (67%) had heard of the NSW Health Clinical Information Project database (CIAP) and this was similar for post-registration nurses. While 70% of the pre-registration nurses had heard of the Cochrane Library, only half (54%) of the post-registration group stated they had heard of it. EMBASE (a comprehensive pharmacological and biomedical database) was known to only 25% of both pre- and post-registration nurses.

As the survey was distributed to the pre-registration group when many would either have completed or would be close to completing final assessments, it was not unexpected to find that 60% of this group had used a bibliographic or electronic database at least 10 times or more in the preceding three months. For 96% of these, the reason for searching the literature was for study purposes. This represented a mean of 7.8 (sd=3.0) literature searches in the previous three months by pre-registration nurses, compared to a mean of 2.5 searches (sd=3.3) by post-registration nurses over the same period. Almost a third (30%) of post-registration nurses indicated that they had also conducted their literature searches for study purposes, however, the sample was derived from nurses undertaking post-registration education courses. Other reasons nurses gave for conducting a search of the literature in the previous three months were work-related (22%) or for clinical teaching (8%).

3.3.6 Self-rated literature searching skills

Replicating a scale from the UK Trust survey of Newman et al.[143] nurses were asked to rate their ability (on a scale of 1–5) on a number of practical skills related to literature searching (Table 3.7). These were:

a. ability to formulate a searchable question
b. identify key terms
c. select relevant information
d. keyboard skills
e. accessing the required database
f. familiarity with search terms

Table 3.7: Mean self-rating of literature searching skills

SELF-RATED ABILITY IN SEARCHING	Pre-registration nurses NSW	Post-registration nurses NSW		Post-registration nurses UK Trust
	n=257	Hospital Trained n=69	University Prepared n=57	n=17
Literature Searching Skills	*Mean score*	*Mean score*	*Mean score*	*Mean score*
Formulating the right question	3.6	2.8*	2.8*	3.4
Identifying key terms	3.9	2.9*	3.1*	2.9
Selecting relevant information	3.9	3.3*	3.3*	3.6
Keyboard skills	4.2	3.4*	3.6*	3.7
Ability to access database	4.2	3.1*	3.3*	2.6
Familiarity with search terms	3.9	2.7*	3.1*	2.5

*p<0.001 compared to pre-registration group

No difference between post-registration groups

Mean scores are based on scale of 1-5 (where 1 indicates no or very little ability, 5 indicates a good level of ability)

Table 3.7 contrasts the mean self-rating scores of NSW nurses responding to this survey question with results from practicing nurses responding to the UK Trust survey. In the Trust survey, a mean score of 3.0 was interpreted as an adequate level of self-rated skill in literature searching.

Overall, pre-registration nurses rated their general searching skills as adequate or more than adequate (Table 3.7), with mean self-rating scores consistently greater than 3.0. Their scores were significantly higher overall than the self-ratings of the post-registration group. Pre-registration nurses were most confident in keyboard skills (mean 4.2) and their ability to access the required database (mean 4.2).

The same five-point scale was used to assess ability to conduct a literature search using electronic databases (Table 3.8, over). Pre-registration nurses rated their ability highest for searching within CINAHL (mean 4.2), indicating more confidence than post-registration nurses whose mean self-rating was 2.4 (hospital trained) and 3.2 (university prepared). Pre-registration nurses reported slightly less ability in searching MEDLINE (mean 3.8) but again were more confident than post-registration nurses whose (combined) mean rating for searching MEDLINE was 2.6. Pre-registration nurses' scores for searching CIAP (mean 2.9) and Cochrane (mean 2.9) were adequate, but as indicated above (in Section 3.3.5), EMBASE is not widely known or used as a database by either pre- or post-registration nurses.

Table 3.8: Mean self-rating of searching electronic databases

SELF-RATED ABILITY IN SEARCHING	Pre-registration nurses NSW	Post-registration nurses NSW		Post-registration nurses UK Trust
	n=257	Hospital Trained n=69	University Prepared n=57	n=17
Searching Electronic Databases	*Mean score*	*Mean score*	*Mean score*	*Mean score*
Medline	3.8	2.5*	2.9*	2.6
CINAHL	4.2	2.4*#	3.2*	2.6
CIAP	2.9	2.2*+	2.9	N/A
Cochrane	2.9	2.1*	2.1*	1.5
Embase	1.9	1.8	1.7	1.0

*p<0.001 compared to pre-registration group

#p<0.001 between post-registration groups

+p<0.02 between post-registration groups

Mean scores are based on scale of 1-5 (where 1 indicates no or very little ability, 5 indicates a good level of ability)

When asked whether advice, training and time were generally available to conduct searches of the literature (Table 3.9, over), mean scores were generally low among both pre- and post-registration nurses. There were again consistent and significant differences between the mean self-rating of the pre- and post-registration nurses'. However, time clearly remains a barrier to literature searching, even for those in the pre-registration group who were essentially full-time students at the time of the survey.

Table 3.9: Mean self rating of availability of assistance with literature searching

SELF-RATED AVAILBILITY OF ASSISTANCE WITH SEARCHING	Pre-registration nurses NSW	Post-registration nurses NSW		Post-registration nurses UK Trust
	n=257	Hospital Trained n=69	University Prepared N=57	n=17
Assistance with literature searching	*Mean score*	*Mean score*	*Mean score*	*Mean score*
Advice	3.4	2.7*	2.8*	3.9
Training	3.2	2.4*	2.5*	2.6
Time to conduct searches	2.9	2.1*	2.2*	1.5

*p<0.001 compared to pre-registration group

No difference between post-registration groups

Mean scores are based on scale of 1-5 (where 1 indicates no or very little ability, 5 indicates a good level of ability)

3.3.7 Reading professional literature

Respondents were invited to nominate the kind of professional literature they normally read. More than one choice was possible from a list of seven book and journal types. Nursing journals were selected as the main kind of professional literature normally read by both groups and this was consistent with findings from the UK Trust survey.[143] There were, however, differences in the way these journals were accessed. Table 3.10 (over) shows the type of literature mainly read by nurses who have just completed their nursing training (pre-registration) as well as for the currently working (post-registration) group.

Overall, pre-registration nurses nominated nursing journals as their main source of professional literature (98%) and nearly all (85%) accessed these online. Eighty-seven percent of the combined post-registration group also chose nursing journals as a main source of professional literature but online access to journals was low among this group (17% for hospital-trained and 25% for university prepared). This is surprising given that university prepared post-registration nurses, for example, rated their mean ability to search within CIAP as generally adequate in Table 3.7 and that access to more than 500 online medical, nursing and allied health journals are available via CIAP. These findings may be reflecting a lack of general searching skills (Table 3.7) or a lack of time to conduct searches in the clinical setting (as in Table 3.9).

Table 3.10: Professional literature read by NSW nurses

TYPE OF LITERATURE MAINLY READ BY NSW NURSES	Pre-registration nurses	Post-registration nurses	
	n=257	Hospital Trained n=69	University Prepared n=57
Respondents could select more than one choice from list:	*Number (%)*	*Number (%)*	*Number (%)*
Monographs	22 (9)	10 (14)	3 (5)
Nursing Journals	251 (98)	60 (87)	49 (86)
Specialist Nursing Journals	211 (82)	41 (59)	35 (61)
Medical & Scientific Journals	168 (65)	32 (46)	20 (35)
Textbooks	241 (94)	54 (78)	43 (75)
Abstracts	163 (63)	30 (43)	22 (38)
Literature reviews	166 (65)	29 (42)	16 (28)

A similarly high percentage of both pre- and post-registration nurses included textbooks in their list of frequently read literature, with around 80% of all respondents selecting this category. Medical and scientific literature (journals) were accessed by 65% of pre-registration and 40% of post-registration nurses, again with pre-registration nurses being more likely to access these online. On average, less than 10% of all respondents nominated monographs as a source of professional literature.

3.3.8 Finding evidence

There are a growing number of extracting journals, review publications, databases and electronic documents managed by organisations around the world to assist practitioners in EBP. Participants were invited to indicate their awareness or use of eight EBP resources available at the time the survey was distributed (this was Question 22 on the survey in Appendix B). Respondents were asked to select one of the categories 'unaware', 'aware but have not used', 'have read' and 'used to help in clinical decision making' to indicate their awareness of these resources. Table 3.11 (below) illustrates the general level of awareness and use of these various EBP services by summarising information within each category. There was a small non-response rate within some categories where percentages do not add up to 100.

Generally, NSW nurses responding to this survey were unaware of the many international groups contributing evidence summaries, reviews, guidelines and other resources to the domain of EBP. Only

7% of all respondents (on average) were aware of the Agency of Healthcare Research and Quality, which supports the National Guidelines Clearing House in the United States, and only 2% (on average) were aware of Bandolier (a searching database) published in Oxford. Similarly, only 7% (on average) were aware of the NHS Centre for Reviews and Dissemination located at the University of York (Table 3.11).

The highest level of awareness for an Australian EBP resource was for the National Health and Medical Research Council (NHMRC). On average, 25% of all nurses responding to the survey were aware of the role of this organisation in promoting EBP. However, Table 3.11 shows that products provided by the NHMRC had been read by only 30% of respondents (on average) and used in practice by only 11% (on average). There were no obvious differences between the pre- and post-registration nurses in regard to their awareness or use of these services for EBP.

The Cochrane Library is accessible to all public hospital personnel in NSW though the NSW Clinical Information Access Project (CIAP). Nurses in NSW responding to the survey were slightly more aware of the Cochrane database of systematic reviews than the database of abstracts of reviews of effectiveness (DARE). On average, 30% of nurses responding to the survey had read systematic reviews from Cochrane and 13% had used these in making clinical decisions (Table 3.11).

Table 3.11: NSW nurses' awareness of resources for evidence-based practice

SERVICES FOR EVIDENCE-BASED PRACTICE	Pre-registration nurses				Post-registration nurses							
					Hospital Trained				University Prepared			
	n=257				n=69				n=57			
	(%)				*(%)*				*(%)*			
	U	***A***	***R***	***RC***	***U***	***A***	***R***	***UC***	***U***	***A***	***R***	***UC***
Agency for Healthcare Research and Quality	87.2	7.8	2.7	0.8	95.7	4.3	0	0	93	7	0	0
Bandolier	93.8	2.3	1.2	2.7	98.6	1.4	0	0	98.2	1.8	0	0
Evidence Based Medicine & Evidence Based Nursing	31.1	16.3	33.1	16.0	69.6	14.5	13.0	2.9	59.6	26.3	10.5	3.5
Centre for Evidence based Medicine CEBM	58.0	21.0	14.0	3.5	79.7	14.5	5.8	0	78.9	15.8	5.3	0
Cochrane Database of Systematic Reviews	31.1	16.0	34.2	15.6	50.7	20.3	18.8	10.1	47.4	21.1	26.3	5.3
National Health and Medical Research Council (NHMRC)	32.3	23.3	31.1	11.3	36.2	29.0	24.6	10.1	43.9	26.3	17.5	12.3
NHS Centre for Reviews and Dissemination	86.4	7.4	2.7	0.8	92.8	4.3	1.4	1.4	87.7	7.0	3.5	1.8
Cochrane Database of Abstracts of Reviews of Effectiveness	44.7	23.0	21.0	8.9	62.3	18.8	13.0	5.8	61.4	22.8	14.0	1.8

Notes: ***U*** = unaware; ***A*** = aware but not used; ***R*** = have read; ***RC*** = read and used in clinical decision making

Looking at the services for EBP which respondents stated they have actually used in clinical decision making, Table 3.12 shows that the most frequently used services by all nurses responding to the survey are Cochrane Systematic Reviews, Evidence-based Medicine and/or Evidence-based Nursing and information on EBP from the National Health and Medical Research Council (NHMRC) of Australia.

Table 3.12: Use of evidence resources in practice

SERVICES FOR EVIDENCE-BASED PRACTICE	All groups n=383
Used to help in clinical decision making	***Number (%)***
Agency for Healthcare Research and Quality	**2 (7)**
Bandolier	**0 (0)**
Evidence Based Medicine & Evidence Based Nursing	**45 (12)**
Centre for Evidence based Medicine CEBM	**9 (2)**
Cochrane Database of Systematic Reviews	**50 (13)**
National Health and Medical Research Council of Australia	**43 (11)**
NHS Centre for Reviews and Dissemination	**4 (1)**
Cochrane Database of Abstracts of Reviews of Effectiveness	**28 (7)**

It is of interest that while only 18% of all nurses (on average) had indicated an awareness of Evidence-based Medicine and Evidence-based Nursing journals (in Table 3.11), these were among the most popular resources named to assist in clinical decision making (Table 3.12).

3.3.9 Appraising Research Literature and Evidence

Similar to the results for literature searching, most pre-registration nurses (74%) indicated that they had received formal training in the critical appraisal of research literature, and of these, most had

received this training as an undergraduate. While 77% indicated that they had performed a critical appraisal of research literature, only 56% were familiar with using critical appraisal checklists. Table 3.13 outlines the mean self-rating scores of all survey respondents with regard to their ability to conduct critical appraisal of different kinds of literature.

Table 3.13: Mean self-rating of critical appraisal skill

SELF-RATED ABILITY TO CRITICALLY APRAISE DIFFERENT STUDY TYPES	Pre-registration nurses NSW	Post-registration nurses NSW		Post-registration nurses UK Trust
	n=257	Hospital Trained n=69	University Prepared n=57	n=17
	Mean score	*Mean score*	*Mean score*	*Mean score*
Studies within area of practice	3.3	2.4*	2.3*	3.8
Randomized controlled trials	3.1	2.1*	2.1*	3.0
Systematic Reviews	2.9	2.2*	2.1*	2.4
Meta-analyses	2.4	1.8*	1.8*	1.7
Qualitative studies	3.1	2.1*	2.0*	N/A

*p<0.001 compared to pre-registration group

No difference between post-registration groups

Mean scores are based on scale of 1-5 (where 1 indicates no or very little ability, 5 indicates a good level of ability)

As before, this scale was replicated from the UK Trust survey[143] and the table contrasts findings from NSW nurses with those of the UK nurses. Combined mean scores for NSW nurses' self-ratings of ability to undertake critical appraisal of literature were consistently below 3.0

across all categories. This included being able to critically appraise the kind of literature each nurse usually reads to inform his or her practice (which would be mainly nursing journals, given the results in Table 3.10).

Overall, mean self-rating scores for pre-registration nurses were significantly higher than the self-ratings of post-registration nurses. Skills for the critical appraisal of meta-analyses were rated lowest across all groups. All respondents thought that development of skills for the critical appraisal of research literature was important (combined mean score 3.5 on a ten-point scale where '1' is extremely important and '10' is not important at all). Fewer post-registration nurses could recall having received formal training in critical appraisal (42% hospital trained and 54% university prepared), or having conducted a critical appraisal of research literature (around 50%). Only 20% of hospital trained and 26% of university prepared nurses were familiar with checklists for critical appraisal.

3.3.10 Understanding the terms and language of evidence-based practice

The survey presents a list of technical terms or language used in EBM (adapted directly from the McColl et al. survey[34]). This is presented as Question 28 of the survey in Appendix B. To determine nurses' understanding of these terms, respondents were asked to select one category to describe whether they 'don't understand this term'; 'don't understand but would like to'; have 'some understanding'; and 'understand and could explain the term to others'. These data are

summarised in Table 3.14 using the same format used for Table 3.11 (awareness and use of EBP services).

As for Table 3.12, where percentages do not add up to 100 in Table 3.14, these relate to a small non-response rate within some categories. NSW nurses responding to the survey seemed to have most difficulty with understanding statistical terms. On average across all groups, the least understood terms were odds ratio (25% had no understanding), meta analysis (24% had no understanding), confidence interval (26% had no understanding) and p-value (29% had no understanding).

Table 3.14: Understanding of evidence-based practice terms

TERMS USED IN EVIDENCE-BASED PRACTICE	Pre-registration nurses				Post-registration nurses							
					Hospital Trained				University Prepared			
	n=257 (%)				n=69 (%)				n=57 (%)			
	N	***NB***	***S***	***U***	***N***	***NB***	***S***	***U***	***N***	***NB***	***S***	***U***
Relative Risk	9.3	17.5	53.3	18.7	10.1	26.1	42.0	21.7	17.5	19.3	50.9	12.3
Absolute Risk	8.9	20.6	46.3	22.6	10.1	24.6	43.5	21.7	17.5	19.3	50.9	12.3
Systematic Review	5.8	10.9	48.6	33.1	8.7	17.4	49.3	24.6	19.3	17.5	54.4	8.8
Odds Ratio	22.6	36.6	28.8	10.5	27.5	39.1	42.6	7.2	33.3	35.1	24.6	7.0
Meta Analysis	18.7	33.9	36.2	9.7	27.5	39.1	27.5	5.8	40.4	36.8	15.8	7.0
Clinical Effectiveness	2.7	4.3	45.5	46.3	4.3	13.0	52.2	30.4	12.3	7.0	52.6	28.1
Number needed to treat	7.4	16.7	45.5	28.8	17.4	27.5	34.8	20.3	19.3	22.8	40.4	15.8
Confidence Interval	22.2	40.5	27.2	8.2	29.9	38.8	26.9	4.5	35.1	38.6	22.8	3.5
Publication Bias	6.6	14.0	39.7	37.7	17.4	24.6	43.5	14.5	22.8	22.8	42.1	12.3
P-value	23.7	34.2	25.3	15.2	37.7	30.4	24.6	7.2	42.1	35.1	19.3	3.5
Sensitivity	8.2	14.0	48.2	28.0	20.3	23.2	42.0	14.5	24.6	24.6	36.8	14.0
Specificity	8.6	12.8	48.2	29.2	32.2	36.1	39.1	11.6	26.3	26.3	35.1	12.3
Heterogeneity	17.1	33.5	33.5	14.8	31.9	23.2	42.0	2.9	31.6	42.1	24.6	1.8

Notes: ***N*** **=** no understanding; ***NB*** = no understanding but would like to; ***S*** = some understanding; ***U*** = understand and could explain to others

Table 3.15: Number with good understanding of EBP terms

TERMS USED IN EVIDENCE-BASED PRACTICE	Pre-registration nurses	Post-registration nurses		Total All groups
	n=257	Hospital Trained n=69	University Prepared n=57	n=383
Understand term and could explain to others	*Number (%)*	*Number (%)*	*Number (%)*	***Number (%)***
Relative Risk	48 (19)	15 (22)	7 (12)	**70 (18)**
Absolute Risk	58 (23)	15 (22)	7 (12)	**80 (21)**
Systematic Review	85 (33)*	17 (25)	5 (9)	**107 (28)**
Odds Ratio	27 (11)	5 (7)	4 (7)	**36 (9)**
Meta Analysis	25 (10)	4 (6)	4 (7)	**33 (9)**
Clinical Effectiveness	119 (46)	21 (30)	16 (28)	**156 (41)**
Number needed to treat	74 (29)	14 (20)	9 (16)	**97 (25)**
Confidence Interval	21 (8)	3 (4)	2 (4)	**26 (7)**
Publication Bias	97 (38)*	10 (14)	7 (12)	**114 (30)**
P-value	39 (15)	5 (7)	2 (4)	**46 (12)**
Sensitivity	72 (28)*	10 (14)	8 (14)	**90 (24)**
Specificity	75 (29)*	8 (11)	7 (12)	**90 (24)**
Heterogeneity	38 (15)*	2 (3)	1 (2)	**41 (11)**

*$p<0.001$ between pre and combined post-registration group (χ^2 test)

If the view is taken that the true understanding of an EBP term is determined by the ability of the respondent to describe or explain this term to others (Table 3.15), then NSW nurses responding to the survey were most confident (on average) in understanding and explaining the term 'clinical effectiveness' (41% of the total sample of pre and post-registration nurses). As noted in Table 3.15 above, the pre-registration group were significantly more familiar with the term 'publication bias' (38% understood this term and could explain it to others) than post-registration nurses. There were also highly

significant differences between pre- and post-registration nurses in their ability to explain the terms systematic reviews, sensitivity, specificity and heterogeneity. This indicates that pre-registration nurses are more confident with at least some of the terms associated with EBP.

3.3.11 Translation of evidence into practice

Both pre- and post-registration nurses expressed confidence in their ability to translate evidence into practice. Asked to express their ability on a five-point rating scale where '0' indicated little or no ability and '5' indicated a good level of ability, the mean self-rating of both pre and post-registration nurses was 3.6.

Only 38% of pre-registration nurses could think of a significant change to nursing practice over the previous two years. When asked to comment whether these changes were implemented as a result of new findings or evidence from research, 63% of this group indicated that they did not know. This is not an unexpected finding, as students are presumably being taught current best practice and there is little benefit in articulating what happened before the practice change. A larger percentage of the practicing (post-registration) nurses (70%) were able to think of changes to nursing practice over the past two years, but they were mostly unable to comment on the reason these changes had occurred, or more specifically, whether it was a result of new evidence from research.

3.4 Limitations of the study

3.4.1 Generalisability

The findings of this survey are limited in their generalisability by the low response rate. In reporting the results I have therefore attempted to demonstrate the similarities of the respondent sample to the demographic and workplace characteristics of the entire population of working nurses across NSW and Australia, and to nursing graduates. Because NSW has a diverse geography and the largest population base in Australia, it supplies the greatest number of nursing graduates per year and largest pool of working clinical nurses in the country. Nursing work in NSW covers a vast array of specialty roles conducted in metropolitan, rural and remote locations within the state. NSW nurses responding to this survey are therefore likely to be representative of nurses in many other parts of Australia and other like regions of the world.

The samples chosen for the survey of EBP skills and attitudes (*Nurses Perceptions of Evidence-based Practice)* were selected from the population of all NSW nurses. Samples were chosen to represent the 'average' nurse, rather than the elite or specialty practitioner who are fewer in number but also may be motivated by different career or other aspirations. This in itself was a limitation of the study because 'real' nursing students were in the middle of sitting exams or trying to find their first job as a registered nurse (pre-registration groups). If already working, post-registration nurses faced the same competing demands of home life and leisure time, children, elderly dependents,

shift work, study, nursing workforce shortages and general levels of dissatisfaction with the profession – coupled with constant reviews and investigations into all aspects of nursing work throughout the early 2000s. This does not present an environment conducive to responding to a voluntary postal survey, and these factors no doubt contributed to the low response rate.

3.4.2 Survey distribution and follow-up

Self-complete postal questionnaires are economical and simple but they are particularly subject to non-response bias.[161] Constrained by the requirements of two institutional ethics committees and the NSW New Graduate Nurse Consortium Steering Committee to maintain the confidentiality of survey participants, it was not possible to contact respondents directly or to gain access to mailing lists or telephone numbers. Attempts were made to improve survey response rates by including a small token (a gourmet tea-bag or lottery ticket) with the survey package. Compared to offering no token (response rate 13%), marginal improvements were evident for the teabag (16% response) and the lottery ticket (20% response), but results varied across the six months in which the survey was distributed. There was a noticeable difference in the response to surveys posted in December 2002 (33% response). This is traditionally a holiday period in Australia and presumably both students and working nurses had more time to respond during this period.

A Cochrane methodology review by Edwards et al.[161] has subsequently reported that a combination of strategies for increasing

response rates to postal questionnaires may be more effective. Strategies include contacting people before sending the questionnaire, sending questionnaires by first-class mail or recorded delivery, providing a stamped-return envelope, making letters and questionnaires more personal and keeping length short, offering incentives with the questionnaire and sending one or more reminders with a copy of the questionnaire to people who did not reply. In this study, no pre-survey letter or follow-up with repeat posting of the questionnaire was undertaken. This was partly due to financial constraints (such as the cost of repeating a post-out to nearly 700 students), but also it was not possible to identify non-responders because of the privacy conditions. However, general reminders were issued to both groups in the public domain. For the pre-registration group this was through the New Graduate Consortium website which graduates were required to access to retrieve information about their up-coming employment interviews. For the post-registration group, reminders were posted in student newsletters which were the main means of communication to students of the College at the time (this is now facilitated by email and web-based discussion forums).

3.4.3 Opting out

Opt-out sheets were used in an attempt to determine whether nurses in the sample were reluctant to engage with the topic of EBP, or whether their non-response was due to more practical concerns. For 13 post-registration nurses who returned these sheets, the most common reason given for non completion (n=8) was unfamiliarity with the topic. For 45 pre-registration students who returned the opt-

out sheets, being too busy (n=26) or unfamiliar with the survey topic (n=20) were the most common choices (respondents could choose more than one option). Clearly, both were important reasons for non-completion of the survey.

3.4.4 Survey integrity and self-rating

Despite evidence of replication of all or part of the McColl et al.[34] survey in the international literature over the past five years, there remains no published data on the reliability or validity of the original instrument. A further limitation of this study is therefore the absence of metric critique of the original survey, possibly confounded by the further additions and alterations to content.

It has also been suggested that self-ratings of EBP skill and knowledge are over-estimated, and that those choosing to participate in such surveys represent an altruistic group with a positive orientation who are therefore not representative of the population in general.[154,162] It is also possible, therefore, that the survey responses reported in this chapter reflect a socially desirable or perceived correct answer rather than a true rating. If this were the case, the degree of variability in the survey responses and the generally poor level of knowledge and skill in EBP demonstrated in the overall responses would be of even greater concern. However, the findings for NSW nurses are consistent with results from the original studies on which this survey was based,[34,143] and with other studies recently conducted with nurses in other countries.[15,163] The demographic profile of the NSW nurses responding to this survey is not dissimilar to that of all final year

students and working nurses across NSW, and therefore, while limited by a poor response rate, results of the study are still likely to be generalisable within NSW and possibly Australia.

3.5 Chapter summary

The results of the survey indicate that in regard to EBP, the issues for nurses in NSW are similar to those experienced by colleagues working in healthcare around the world. Nurses responding to this survey had a welcoming and supportive attitude towards EBP but the results demonstrate that a large proportion of the current nursing workforce in NSW (post-registration nurses in the survey) have minimal competence and confidence in their skills for EBP.

The literature review in *Chapter 2* suggested that nurses are more comfortable asking colleagues or peers for practice information than using bibliographic databases to find evidence for practice.[15,16,134] Yet, similar to nurses responding to the UK study of Newman et al.[143] nurses in NSW commonly believe that up to 70% of their current nursing practice is based on evidence. The high scores found in both of these studies suggest that most nurses perceive current nursing practice to be evidence-based. This figure seems to contradict a prevailing argument that the pool of evidence for nursing practice is limited. Clearly it depends on how this evidence is individually defined and valued by the nurse and how (and by whom) the quality of the evidence is graded.

This study demonstrates that there is variation in the degree to which nurses in NSW know and understand the concepts of EBP. Despite

being able to identify some common themes, these nurses' perceptions of the meaning of evidence (as described by their own definitions) are not homogenous. The boundaries for implementing these variously defined meanings of evidence into the multidisciplinary healthcare setting, and the preparation of nursing students to understand whether these types of evidence are appropriate to the different contexts of nursing practice, are currently poorly defined. While broader definitions of evidence may be necessary to express the various contexts of nursing practice, it appears that NSW nurses currently have a range of attitudes, skills, knowledge for EBP. It cannot therefore be assumed that there is a consistent or common base upon which to build their further EBP education.

The next chapter looks to opinion leaders in nursing to determine what they understand as evidence for EBP. Are they able to provide a more cohesive definition of evidence for EBP within the context of nursing practice?

Chapter 4

Views of evidence from nursing opinion leaders

4.1 Chapter overview

General approaches to examining the understanding of a phenomenon often look for agreement or consensus within a group. The results of the survey reported in *Chapter 3*, however, suggest that in looking at the ways in which nurses understand evidence for evidence-based practice (EBP), there may be more differences than similarities. Rather than an analysis of consensus, then, exploring differences in nurses' understanding of evidence for EBP might provide a more useful way of capturing the range or breadth of their understanding.

In this chapter, I look to local opinion leaders in nursing in New South Wales to determine their views of evidence, and to address the third research question posed in this thesis (What do opinion leaders and role models in nursing understand as evidence for EBP?). More specifically, I seek to determine differences between their views in order to better understand the variation observed in the skills, knowledge and attitudes of practicing nurses in New South Wales (NSW), and those about to graduate from nursing programs, as described in *Chapter 3*.

Local opinion leaders were defined as those nominated by their colleagues as having influence on decisions about nursing education and service delivery in NSW. Nursing opinion leaders in NSW

occupy positions of leadership within the profession and include those who are selected to represent nurses to the public, to government and in the media. Selecting nursing opinion leaders to look at how EBP is understood within the profession of nursing was motivated by three rationales:

1. The views, judgements and beliefs of nursing leaders towards EBP may be influencing individual nurses' perceptions of evidence.
2. Opinion leaders might also perform a sanctioning function in the diffusion of evidence into the culture and practice of nursing.
3. Because of their experience and leadership within the profession, the views or opinions of nursing leaders towards preparation for EBP will influence the future development of EBP and EBP education in nursing.

A qualitative phenomenographic approach was selected to explore whether there are qualitatively different ways in which nursing opinion leaders understand evidence for EBP. Semi-structured interviews were conducted with 23 nursing opinion leaders representing all nine universities and one college offering an undergraduate nursing program in NSW. This chapter outlines the reasons for choosing phenomenography as a method for this study, describes this method, and presents the results of the interviews. It explores opinion leaders' understanding of evidence for EBP and presents a summary of their expectations regarding the preparation required for EBP in nursing, particularly in undergraduate programs. Some of these views are incorporated into the development of a conceptual framework for EBP education in nursing in *Chapter 6*.

4.2 Interview design and method

4.2.1 Identifying opinion leaders in nursing

A local opinion leader in healthcare can be defined as a health professional nominated by their colleagues as being educationally influential.[86] Local opinion leaders were selected to further investigate perceptions of evidence in nursing because their judgements and beliefs may have an influence on individual nurses' understanding of evidence, and their subsequent behaviour towards EBP. It is suggested that opinion leaders might also perform a 'sanctioning function' in the diffusion of new innovations.[163] In a Cochrane review assessing the effects of local opinion leaders on professional practice and health outcomes, Thompson O'Brien et al.[86] state that it is not clear how opinion leaders actually influence others but their credibility and status within their profession or community, and their knowledge of local conditions, may be a factor.

Nursing opinion leaders in NSW were defined as those who have influence on decisions around nursing education and service delivery in nursing in NSW. Nursing opinion leaders who occupy positions of leadership within the profession would include those who are selected to represent nurses to the public, government and media, and who are highly respected within nursing academic and clinical networks. Examples of nursing opinion leaders would therefore include the Chief Nurse of NSW (the highest State government position occupied by a nurse in NSW); the President of the NSW Nurses and Midwives Board (the organisation responsible for the

registration of all nurses in NSW under the Nurses and Midwives Act *1991* and for establishing minimum requirements for undergraduate nursing programs); the Executive Director of The College of Nursing (based in NSW); the Deans of faculties of nursing and Heads of Schools of nursing at NSW universities responsible for the undergraduate and postgraduate education of nurses in the state; and those occupying professorial or research positions in the clinical setting (nursing clinical chairs) within the NSW area health service structure.

In NSW there are also a number of centres of nursing and health services research that are distinguished by their ability to attract external grant funding and to promote evidence-based practice in nursing. Directors of these units are also considered to be opinion leaders for EBP. As discussed in *Chapter 2*, the Joanna Briggs Institute (JBI) based in Adelaide is known to many Australian nurses as a source of 'evidence summaries' for nursing work. Established in 1995, the JBI has members in 25 countries and promotes evidence translation, transfer and utilisation through 22 collaborating centres throughout Australia and around the world. The Director of the JBI and the Director of the NSW JBI collaborating centre are thus also considered to be important leaders in EBP in Australian nursing.

4.2.2 Theoretical approach to the interviews

The aim of this study was to explore the third research question:

> What do opinion leaders and role models in nursing understand as evidence for EBP?

As the results of the survey with pre- and post-registration nurses had revealed a range of skills, knowledge and attitudes towards EBP, a qualitative phenomenographic approach was adopted as the theoretical framework for this investigation. Phenomenography is a method based on variation. It is used to describe the limited number of qualitatively different ways in which a phenomenon is experienced, conceptualised or understood by people. Exploring the differences (or range of variation) in opinion leaders' understanding of evidence for EBP was expected to be more informative for capturing the breadth of this understanding than simply describing those views which demonstrate consensus. Therefore, instead of asking what opinion leaders and role models in nursing understand as evidence for EBP, the research question is restated within the theoretical framework of phenomenography as:

> What are the qualitatively different ways nursing opinion leaders understand evidence for EBP?

4.2.3 Background to phenomenography

Although increasingly used as a method in science and health services research over the past 30 years,[164] information and critique on phenomenography has been somewhat limited. Much of the literature pertaining to this approach has focussed on defining it as a method, and distinguishing it from other forms of qualitative research. Because phenomenographic method is not well known, a brief summary of its background, the terms used within the method, and the features that distinguish it from the better known field of

phenomen**ology** are outlined below. Terms that have a specific meaning within phenomenography are written in italics in the following text to differentiate them from normal word usage.

Phenomenography (or Göthenburg phenomenography as it is sometimes called) originated in Sweden in the 1970's. Commencing in educational research, many of the early examples of experimental phenomenography are attributed to Ference Marton[165] although a number of other educational researchers in Sweden (Roger Säljö, Lars Owe Dahlgren and Lennart Svensson) were also using different applications of this method at the time.[166] Derived from Greek 'phenomena' (phainomenon – meaning appearance or to show) and 'graphy' (graphein – meaning to describe in word or image),[167] phenomenography is defined as a description of appearances, or the description of some examined phenomenon. Phenomenographers believe that access to a phenomenon can occur via the examination of individual *conceptions* of the phenomena.

In phenomenography, a *conception* is a way of explaining or experiencing something in terms of the critical aspects of that phenomenon[168] and represents the abstract relationship between an individual and a part of the world.[169] My interpretation of a *conception* is that it has a similar meaning to the more commonly used term 'concept'.[170-1] Phenomenography does not therefore seek to formulate principles about how things appear (the process of thinking), but rather attempts to portray their meaning using the language of the participant (the content of their thinking). The outcome of a phenomenographic investigation therefore remains at a purposely

descriptive level, with the ultimate goal of describing differences in the way people make sense of something (through their *conceptions* of it).

There are a number of features which distinguish phenomenographic method from the more commonly known method of phenomen**ology** (the study of consciousness or the meaning attributed to our experience). These differences are outlined briefly below.

Non-dualism

In phenomenography, each thought or experience is seen to form part of the individual's way of conceiving reality[172] and it is assumed that this reality can be described to another person.[168,173-5] This assumption of phenomenography is known as *non-dualism*: a person is both the subject (the observer) and object (the observed) of their experience. It is therefore assumed in this phenomenographic study that the thoughts and experiences of a nursing opinion leader are what form their understanding of EBP, and further, that it is possible for them to describe this understanding to me in the context of an interview.

In the more commonly known method of phenomen**ology**, the dimensions of subject (observer) and object (observed) are considered to exist separately (dualism). Consciousness can be disengaged from the physical world, with the method aiming to interpret the essence of the persons' reality from within (the thinking or mind of the observer),[176] rather than from their external representation of it.

Second-order perspective

Another point of difference between the two methods is that in phenomenography, the researcher attempts to *bracket* (separate and ignore) their own experience or judgment to understand the way others see the world. Experiences are described and presented according to the way the researcher is presented with them. Phenomenographic researchers do not claim to 'know' the other person's experience[165], but they do attempt to relate that person's externalised experience or understanding of the phenomenon. This is an attempt to maintain the internal relationship the individual has with their own reality (non-dualism) and is defined within phenomenography as employing a *second-order perspective*.[177] As the researcher in this study, I therefore had to separate my own judgements about EBP from what opinion leaders' told me was their experience or understanding of it. This *second-order perspective* in phenomenography can be contrasted with the method of phenomen**ology**, in which the researcher's presence is not separated from the phenomenon. In phenomen**ology**, the researcher forms part of the interpretation, and the analysis is made through their own in-depth exploration and understanding of it.

Focus on variation

An object of phenomenography is to understand variation in a phenomenon, whereas phenomen**ology** focuses more on describing the particular phenomena or how it appears in consciousness. Rather than focusing on where the variation comes from (for example, from

different cultural, developmental or clinical states), the focus of phenomenography is on the features or range of variation itself.

A recurring principle in all phenomenographic investigations is that the understanding of a phenomena will, in a sufficiently large sample of people, vary in a limited number of qualitatively different ways, and will therefore produce a limited number of descriptions that can be isolated and explained.[174-5] Using phenomenography, it is therefore theoretically possible to identify a full range of descriptions of evidence for EBP from nursing opinion leaders, isolate common features in their descriptions (by forming *categories of description*) and determine variability in their understanding. It is anticipated that this in-depth analysis might also offer further insights into how the views of opinion leaders influence nurses in NSW, either directly (through role modelling) or indirectly (through education) to produce the kind of results found from conducting the EBP survey reported in *Chapter 3*.

In phenomenography, *categories of description* summarise the specific content and form of the *conceptions*[169,172] described above. A *category of description* encapsulates the way of understanding a phenomenon and therefore has both a theoretical (understanding) and empirical (grouping) function. *Categories of description* are derived in much the same way as 'themes' in other qualitative analyses,[170] with the researcher determining variation or differences in the ways phenomena appear within and between individuals.[168]

4.2.4 Applying phenomenography to the opinion leader interviews

Because it is assumed that variation in understanding can be determined through individual descriptions of the phenomenon,[172] the individual interview is the dominant method of data collection in phenomenography.[174] In-depth semi-structured interviews were selected as the means of gaining access to the ways in which local (NSW) opinion leaders understand the phenomenon of evidence for EBP in nursing. Using the phenomenographic method, it was necessary for me firstly to *bracket* my own judgements about EBP for the interviews and secondly, to closely attend to the opinion leaders' descriptions of evidence for EBP in order to identify their full range of understanding.

In order to achieve these objectives, two interviews were conducted in the early stages of the project (during 1999 and 2000) to determine what format the interviews would take and to trial approaches and questions. One of the interviews was with a nursing Clinical Chair from NSW, chosen to be representative of the intended sample. The other was with an international opinion leader in nursing research from the United States who is a frequent visitor to NSW in her capacity as Visiting Research Fellow to one of the universities included in this study. These interviews are not included in the analysis but an examination of their content formed a basis for the development and refinement of an interview guide (Appendix C). Further, a question in the EBP survey (Question 4, Appendix B) had asked "Using one of the definitions of evidence on the first page, what percentage of your clinical practice do you feel is currently evidence-

based?" A similar question was included in the interview guide as a means of linking opinion leader responses to those of nurses responding to the survey (*Chapter 3*).

It is recognised that schedules or guides can interrupt the natural flow and flexibility of the conversational style interview, and Marton[174] further suggests that the phenomenographic interview should not have too many questions determined in advance. However, in most qualitative approaches it is necessary to first establish the experience of the phenomenon and then explore aspects of it as fully as possible. I was also aware that because I was working as a nursing Clinical Chair in NSW at the time interviews were conducted, many of those I would be interviewing would be known to me on either a personal or professional level. In this study, the interview guide was used to help me *bracket* my own judgements and experiences of EBP from the interview, to focus the interview on the opinion leaders' experience of evidence and EBP, and to utilise my time with participants as efficiently as possible by minimising the number of questions required to fully explore their experience.[178]

4.2.5 The sample

A maximum variation strategy was chosen to obtain a representative sample of opinion leaders from both metropolitan and rural areas of NSW, and to balance numbers in the nursing academic, management and practice settings.[176,178-9]

The following process was used to prepare for contacting opinion leaders within the education sector:

1. A search of the website of the school or faculty at the NSW university or college offering undergraduate nursing education;
2. Identification of the Dean or Head of School and any other relevant program or curriculum co-ordinators within the school or faculty;
3. A print-out of the section of the website (usually the school or faculty homepage) presenting an overview of the philosophy of the nursing program;
4. Exploration of subjects offered in the undergraduate nursing program and a print-out of the research or evidence-based practice component of each course as described in the student handbook.

This list of education opinion leaders was cross-referenced to a list of members of the Australian Council of Deans of Nursing and Midwifery to ensure all active NSW members in 2003 and 2004 had been identified. The Dean or Head of School (in multidisciplinary health faculties) of every university and college in NSW offering an undergraduate nursing program (n=10) was sent a letter describing the study and requesting an interview on the topic of EBP. Clinical Chairs (Professors of Nursing) and other senior nursing leaders such as the Chief Nurse (NSW), the President of the NSW Nurses and Midwives Board, the Directors of the College of Nursing and the Joanna Briggs Institute were contacted in person. All initial requests for an interview were followed with a telephone call and confirmatory email. Appointments were organised once verbal consent to conduct the interview had been obtained. Conduct of the opinion leader interviews was approved by the Human Research Ethics Committee of the University of Sydney. Financial support for travel to universities and other destinations throughout NSW was

supported by a scholarship awarded from the NSW Nurses and Midwives Board in 2004.

4.2.6 Conduct of Interviews

Interview participants gave both verbal and written consent prior to the interview and were invited to retain a study information sheet. Interviews were conducted in a place of convenience nominated by the participant, usually at their place of work (a University or College) or occasionally at an alternative neutral environment. This allowed the interview to be conducted in an informal and relaxed style. Respective information from the search of university and college websites (the general philosophy and courses offered) was reviewed immediately prior to interviewing each opinion leader. Details about the structure and content of subjects incorporating research or EBP in the undergraduate program could then be discussed in depth with the participant during the interview.

Interviews were conducted according to the phenomenographic method which aims for natural dialogue while also facilitating thematisation of the subject's experience. Marton[174] suggests this is achieved by commencing with an opening question on the general phenomenon, and jointly representing experiences and understandings between the interviewer and interviewee so that aspects of the participants' awareness are brought to reflection. The interviewer then encourages the subject to focus on the situation or problem and reflect on their awareness of it. Each interview conducted for this study commenced with the same lead-in question

(Appendix C) which aimed to encourage the subject to focus on and establish their awareness of EBP. This was: What is your opinion on evidence-based practice in nursing?

Although the interview guide was followed for all interviews (Appendix C), the order and flow of questions was dictated by the participant. Once commenced, the interview could follow any path the participant wished to take, with prompts used as necessary to keep the conversation active, to pose the questions contained in the interview guide at the appropriate point in the conversation and/or to clarify meaning. Reflective comments such as 'what do you mean by that?' or 'can you explain that in more detail?' were also used as general probes. Depending upon whether the interview was conducted with a nurse academic or professional opinion leader in nursing, respectively, the second focus question was either:

> (a) How is evidence-based practice or research currently taught within the undergraduate curriculum at this University?
> *or*
> (b) Do you have any thoughts on the way EBP or research is currently taught to nursing students at undergraduate level?

Each participant could interpret the meaning of questions in their own way, and answer accordingly. Although there was a degree of natural ordering in responses because questions and prompts from the interview guide were used, these groupings do not automatically constitute *conceptions*. *Conceptions* are formed on the basis of content, not structure. As the interviews progressed, *conceptions* provided a framework for establishing the *categories of description.*[169] For example,

conceptions of EBP as 'science', a 'rigorous process' or based on 'randomised controlled trials' were collectively represented by a *category of description* in which evidence is understood to be synonymous with research. The closing question in all interviews asked the participant if they wished to add anything or offer any final thoughts.

All except one of the interviews were conducted face-to-face; the other was by speaker telephone. An audio tape was used (with participants' permission) and field notes were recorded immediately following each interview to detail any special circumstances or observations of the setting. All interviews were transcribed verbatim from the audiotape and each completed transcript was checked through while listening to the tape to ensure that the transcript had retained the subjective meaning (represented by inference, inflexion, and grammar) presented during the verbal interview.

4.2.7 Analysis of interviews

Phenomenographic analysis of interview data aims to develop hierarchies of structure and meaning from the *categories of description*. This is achieved by juxtaposing the logical relationships between the *categories*.[174-5] In this system of conceptual ordering, the structured pool of ideas, beliefs and experience represented by the *categories of description* are seen to underlie the interpretation of reality. This reality is referred to as the *collective intellect*.[165] In phenomenography, *categories of description* explained through the *collective intellect* are finally presented in an empirical map called the *outcome space*.[165] The

outcome space is therefore the framework in which the logical internal relationships between the *categories of description* are described or displayed according to the *collective intellect*. In more simple terms, the *outcome space* is equivalent to presenting the results of an analysis within the particular framework reserved for that method.

Table 4.1 captures the iterative and interactive steps[164,174-5,180-1] which were followed in the analysis of the interviews. Transcription and preliminary data analysis occurred as soon as practicable after each interview. A face sheet was attached to organise the transcript according to the time and place of interview, to highlight *conceptions* emerging from the preliminary exploration of the data and to identify any questions or follow-up required. A summary was attempted every three to five interviews. The analysis of early interviews therefore allowed *categories of description* to be developed, while data from later interviews focused on building, testing and establishing links between the categories, and determining variation within them.

Table 4.1: Analysis of phenomenographic interviews

1. *Familiarisation*: read the entire material in order to obtain an overall picture
2. *Compilation*: select the comments of interest to the research question
3. *Condensation*: reduce individual answers to find central components and compare with the content of interviews (identify *conceptions*)
4. *Grouping*: form pools of meaning by grouping comments from the previous stage (identify *categories of description*)
5. *Comparison*: compare similarities and differences between the pools of meaning and test emerging categories by comparing with original transcripts
6. *Naming*: generate categories of description and name these to emphasise their essence (name *categories of description*)
7. *Contrastive*: describe the meaningful interrelationships between categories as accurately as possible using the language of the participant (in the *outcome space*).

The first of 23 interviews was conducted in August 2002, the last in March 2005. Following each interview, a copy of the typed transcript was posted to each participant with a thank you letter and invitation to verify content, and to add (or detract) any comments prior to the final analysis. I initially anticipated that approximately ten in-depth interviews would be sufficient to describe the range of different ways in which evidence for EBP is understood by opinion leaders in nursing, as I was expecting a consensus to emerge. As the interviews progressed, however, it became apparent that in order to represent the full range of views, it would be necessary to establish the end points of the range, in order to adequately describe what appeared to be developing as a continuum. The interviews had also exposed an

inconsistency in participants' use of the words 'research' and 'evidence' which required further exploration. Interviews with the target sample of nursing opinion leaders therefore continued until variation in their *conceptions* of evidence for EBP were able to be described by *categories of description* that had already been developed over the course of the interviews. That is, until no new data emerged that was outside the range of views already expressed and was unable to be described by an existing category.

During the interviews, participants had frequently referred to others whom they regarded as opinion leaders within nursing. While many of those suggested had already been approached (such as representatives of NSW universities and colleges), it was possible to identify two new participants from the interviews (snowball sampling). These were a Professor of Midwifery involved in the writing and launch of the first direct-entry Bachelor of Midwifery program in NSW in 2004 and the recently retired Chief Nursing Officer for NSW, who had held this position for the previous 11 years. Both were contacted and consented to be interviewed. Opinion leaders also made reference to their own publications (or those of others) during the course of the interviews. These documents were sourced and read prior to conducting the final analysis of the interviews as a means of gaining further insight into the ways individual participants had developed their understanding of evidence and EBP.

4.2.8 Establishing categories of description for evidence

As identified in Table 4.1 above, the analytic process of forming *categories of description* seeks to form pools of meaning by grouping *conceptions*. *Categories of description* have four fundamental characteristics. They are relational (dealing with the subject-object relation); experiential (based on the interviewees' experience); content oriented (focus on meaning); and descriptive. Their aim is not simply to describe the data in general terms, but to differentiate, group and relate the data.[169,172]

Categories of description are characterized in the *outcome space* by two different aspects[182]:

1. *Structural:* the combination of features discerned and focused on by the participant; and
2. *Referential*: the meaning that is outlined and attended to by the participant.

In forming *categories of description*, even logically inconsistent variations in meaning are regarded as capable of expressing something logical about the phenomena if they contribute to the collective sense of that phenomenon.[175] The researcher aims to hold in check (*brackets*) their own preconceived notions or ideas to focus on differences in the ways the phenomenon appears to the participants.[174]

Each transcript was reviewed several times, with and without the accompanying audio tape. A colour-coding method suggested by Roberts and Taylor[170] was used to distinguish *conceptions* within each transcript and to organize the text. This was achieved using combinations of the highlighter tool and coloured font in Microsoft

Word® Version 5. Once this had been completed for all 23 transcripts, it was then possible to 'cut and paste' text of the same colour into a sub-file representing a particular *category of description*. Text was tagged as a means of maintaining a link to the participant's original transcript. The sub-file was then used to establish category attributes and discern variation.

Data from my field notes, course curriculum documents and participants' publications were examined in conjunction with the sub-files in order to gain a deeper insight into the different ways in which evidence for EBP was understood by the interview participants. This process also helps to move the unit of analysis away from individual responses, towards an understanding of the shared pool of ideas (the *collective intellect*). Amalgamation, division and ordering of the sub-files continued until logical relationships between structure and meaning were established and a limited number of hierarchically ordered categories were evident (Step 7 in Table 4.1). The categories representing the extreme ends of the continuum of understanding evidence for EBP were established first. For example, at one end, is a *category of description* in which evidence is understood only through its relationship to research, whereas at the opposite end, another category represents an understanding of evidence which is inclusive of all or most of the five steps involved in bringing evidence to practice,[121] and also relates the conduct of these steps to the context in which they occur.

4.2.9 Reliability in phenomenography

The most important demand made on the reliability of phenomenographic research is that the original material corresponds with the descriptive categories that are created. This can be demonstrated through the use of direct quotes from the interviews, or by using another researcher to judge which *categories of description* reported in the *outcome space* apply to particular individual transcripts.[174,180] The *categories of description* should also be parsimonious (reduced to the minimum number required to explain all variations and hierarchies) and internally consistent (contain a complete but distinct set of information relating to the phenomena under investigation).[172,175]

The process of establishing parsimony and internal consistency in *categories of description* for evidence in this study was an iterative and interactive process that occurred over several months. *Categories of description* were presented to a colleague with experience in both interview analysis and EBP. Unmarked transcripts of all interviews were also supplied, with the final categories discussed and agreed with this colleague prior to their naming. Concurrence was established by determining the level of agreement between us in sourcing the identified *categories of description* within individual transcripts. Marton[174] defines this inter-subjective agreement as being able to agree on the source of *categories* in at least two-thirds of the cases, and in two-thirds of the remaining cases after discussion. Generally, agreement is reported to range between 65% and 100%[183] in phenomenographic studies. There were two instances for which my

colleague questioned the source of *conceptions* within the 23 interviews, but no other differences of opinion or disagreement with the identification or final reduction and juxtaposing of the *categories of description.* This represents 90% agreement.

This process was followed by a period in which the review of external materials such as field notes, course curriculum documents and participants' publications were examined in conjunction with the final *categories of description*. This was in order to identify and describe any further logical relationships that may be present between the structure and meaning of the *categories* within the *outcome space*. Direct quotes are also used throughout the results to demonstrate concordance between the *categories of description* and the interview transcripts.

4.3 Interview Results

4.3.1 Opinion leader participants

Responses to requests for an interview were very positive, with all but one of the original opinion leaders contacted agreeing to participate. The person who declined had been employed for only a few weeks in her position and suggested another faculty member who was subsequently interviewed. At least one representative was interviewed from each of the 10 universities and colleges in NSW offering an undergraduate nursing program during 2004. In addition, participants included the Chief Nurse of NSW at the time the study was conducted, and her immediate predecessor. The Director of the Joanna Briggs Institute (based in Adelaide, Australia) and the Director of the NSW Collaborating Centre of the Joanna Briggs also consented

to be interviewed, as did leaders occupying senior positions with the NSW Nurses and Midwives Board and the College of Nursing. Participants with nursing education and clinical leadership roles included four Deans, four Heads of School, three program co-ordinators of undergraduate nursing programs and six Clinical Chairs who were based either within a university or clinical setting (usually an area health service). Twenty one of the 23 opinion leaders gave consent to be identified in a list of interview participants (Appendix D). Six were male and all were more than 40 years of age. Four participants had backgrounds in disciplines other than nursing, having completed qualifications in commerce, economics, sociology, psychology and science. Twenty-one of the 23 participants had a doctoral qualification. Collectively, this group had authored a broad range of publications, including opinion pieces and research articles in Australian and international peer-reviewed publications. Four had authored, co-authored or edited textbooks on nursing research or research methods.

Interviews were conducted within the Sydney metropolitan region as well as in outer metropolitan and rural locations of NSW. The length of interviews ranged between 50 and 80 minutes. Verification of the typed interview transcript was obtained from all participants. Some minor edits were made for spelling or transcription errors but no comments were added or deleted.

4.3.2 Ways of understanding evidence for evidence-based practice

The abstraction, reduction and comparison of interview data generated seven qualitatively different ways in which nursing opinion leaders appear to understand evidence for EBP. The pools of meaning defined by each *category of description* are sometimes quite obviously distinct from each other (such as those representing the distinct end-points of the continuum of understanding evidence in Table 4.2 below). At other times, the *categories of description* seem almost identical except for small variations in respondents' focus. In the following sections, the processes of grouping, comparing and naming the *categories of description* are illustrated using direct quotes from the opinion leader interviews. Firstly, however, Table 4.2 presents the first stage of modelling the *outcome space* in which relationships between the *categories of description* are displayed.

In Table 4.2, the *categories of description* commence with a perspective in which evidence is understood from what may be described as a relatively simple position. Evidence is understood to be synonymous with research and research method (category A). In category B, the focus is on the research knowledge and skills a nurse would need to practice using evidence. Categories A and B are similar in that they describe a way of understanding evidence for EBP where the shared pool of meaning or *collective intellect* is to understand that 'evidence = research'. However, in category A, the focus is externally located on the research method aspect and in category B, the focus is internally located on the individual skills required to 'do' research. Therefore, the beliefs and experiences which underlie the interpretation of

evidence as equal to research are the same, but there are two variations apparent in the conceptual ordering of this understanding.

Table 4.2: Categories of description for understanding evidence

Categories of description for evidence	*Collective understanding or intellect*
A. Evidence is synonymous with research and scientific method. **B.** Knowledge or skill in evidence is equivalent to knowledge and skill in research.	Evidence is the same as **research.**
C. Other forms of evidence are relevant to nurses or nursing. **D.** The kind of evidence required depends upon the context of nursing practice.	Evidence includes research but it can also include **other** forms of **validated input.**
E. The best available evidence is used for the clinical question being asked. **F.** Evidence translation relies on support for EBP in the clinical setting.	The kind of evidence used depends on the **context of the clinical decision**.
G. Evidence is used for EBP which is a means of improving patient outcomes through effective and efficient health care.	Evidence is understood within the broader context of **health care**.

The conceptual system of ordering then builds to the next level (categories C & D) in which the understanding of evidence as equivalent to research forms the basis of the understanding, but other forms of input are also incorporated into the definition. The focus of this understanding is that the input (research or evidence from other sources) must be validated or qualified in some way to be classed as evidence for EBP. In Table 4.2, for example, it can be seen that

category C describes evidence in relation to its relevance to nursing practice. This category steps away from a perceived EBM (biomedical) definition to claim that different kinds of evidence (other than research) can be valid for nursing practice. Using a slightly different focus, another *category of description* (category D), groups the meaning of evidence not simply by its relevance to nurses or nursing, but also by whether it is appropriate to the clinical context of nursing care.

In this way, *categories of description* build upon each other to form an empirical map within the *outcome space.*[165] There is a sense that the *collective intellect* continues to build in a hierarchical fashion, where at the next level the understanding of evidence moves outside the context of (just) nursing to include the patient and their context. At this level (category E) evidence does not just simply exist but is actively selected from whichever source is the 'best available' for the clinical decision. Evidence for EBP may come from research, but it might also come from a variety of other sources such as professional experience or consensus. It is my view that this category marks a point of departure in the various ways of understanding evidence, because here evidence is not a static concept but has a value apportioned to its relationship to the patient and the context of the clinical decision. The collective understanding represented by categories E and F (in Table 4.2) incorporates the notion of a practitioner having choice over the kind of evidence to use and demonstrates a more complex understanding of evidence as a dynamic part of the wider goal of EBP. Within the same collective intellect but from a qualitatively different focus, category F recognises

that part of making an evidence-based clinical decision also relies upon the support offered by the clinical environment. In other words, the context of the clinical decision is not only concerned with the patient, their family and the expertise brought by the clinician or team: support and leadership from the organisation are also required to facilitate the evidence-based decision and to see it successfully implemented.

Finally, category G presents the opposite end of the continuum of understanding evidence for EBP. Evidence is understood in the broadest *structural* and *referential* terms to be part of the much wider picture of EBP, probably more accurately described by the term evidence-based 'healthcare'. The possibilities for EBP to increase effectiveness and efficiency in healthcare and thereby improve patient care and outcomes are considered to be part of this understanding.

4.3.3 Exploring qualitative differences in ways of understanding evidence

The process of grouping, comparing and naming *categories of description* can be further illustrated by using direct quotes from the opinion leader interviews. This demonstrates concurrence between the interviews and developed *categories* by allowing the full range of variation to be explored using the opinion leaders' own words. In addition, it permits the relationship between the *structural* and *referential* aspects of the opinion leaders' understanding to be characterized in the final framework (*outcome space*), where logical internal relationships between the categories of description are

displayed (see Table 4.3). The *collective intellect* is also displayed within each of the following sections using a conceptual picture.

In the following section, interview participants are described according to their substantive positions. For example, opinion leaders from education are described as *Academics*, nursing clinical chairs are denoted as *Clinical Chairs* and opinion leaders representing various government or professional organisations are described as *Leaders*. Three opinion leaders elected that their quotes remain *Anonymous*. Text within square brackets inside a quote is placed to clarify meaning or explain abbreviations used by the participant.

Evidence is the same as research – Categories A and B

The degree of variation in the use of language describing evidence was initially surprising. While some opinion leaders made little distinction between 'research' and 'evidence', others drew a clear line.

As depicted in Figure 4.1, the conceptual view of this collective understanding (*collective intellect*) is that research and evidence are inexorably linked. However, their relationship can be described or understood in different ways. In the figure, research is the major part or whole of what makes up evidence. The participants' quoted below use the words 'research' and 'evidence' to represent separate ideas, but others used these words almost interchangeably (category A in Table 4.2).

> Research is not evidence … it is part of producing that evidence. (A*cademic)*
> …I'm probably what you would describe as a traditionalist … in terms of the typical research approaches that you generally

> find in evidence-based practice texts that say that these are the research methods you should use to substantiate your practice. (*Academic*)

Figure 4.1: Conceptual view of Categories A and B

Evidence was seen as synonymous with research method and as another form of scientific process, rather than as an approach to practice. The reasoning appeared to be that if evidence is understood as being based on quantitative research, then EBP must also be about quantitative research. For example:

> …There are questions that suit themselves very well to quantitative research … and because evidence-based practice is aligned mightily with quantitative research … those questions that are suited to quantitative research are also going to suit an EBP approach. *(Academic)*

Research and evidence could also be viewed simultaneously from a philosophical and methodological position. The following quotes demonstrate the range of ways in which the words 'research' and

'evidence' were used. These results suggest that the terms are also being used interchangeably in the clinical and teaching environment:

> … Because it's come from a more positivist school of thinking, I think it [evidence] is intended to really refer to the development of standards of interventions that have been researched and that have a normative basis to it, in a sense, of statistics that relate to norm and distribution around the norm … but they're also linked to schedules of interventions and treatments. In nursing … I've had to try to apply the term in workshops and lectures, I've tried to modify it to an enquiry-based practice and sometimes, research-based practice. *(Clinical Chair)*
>
> … I don't see a great distinction between the two because even in research – you can still to some extent devalue or misrepresent what you are trying to define, or what you're trying to look at – what evidence you're trying to get out of that research. *(Academic)*
>
> … I guess for me, I do tend to see them together, and in that way I'm not a purist because I think at this point, that's what we're all about. I don't see research as being so narrow, and I don't see evidence as being narrow either. I actually see them coming from a variety of different directions. *(Academic)*

More than one opinion leader stated that evidence-based practice is not new, but is simply what used to be called 'research'-based practice. Some opinion leaders offered an insight into possible reasons for their own and others distinctions (or lack of distinction) between research and evidence. This was related to both interest and skill in research and EBP, and to academic maturity (category B in Table 4.2). For example three academics offered these views:

> … there are people who are, you know, they've got Masters Degrees and PhDs. They teach research, they've taught it for years. They're as certain that what they are doing is the right thing as I am certain that I'm doing the right thing. *(Academic)*
>
> … when you're looking at teaching evidence-based practice, the assumption is that those people who teach in the

> undergraduate programs understand evidence-based practice and what it means – and that might be questionable too. *(Academic)*
>
> … but my sense is, that idea of whoever gets the short straw has to teach research methods is still out there, because well, let's face it – it's not really core – it's the difficult stuff that nobody wants to deal with and the new person gets lumbered with. *(Academic)*

Subjects in research or evidence-based practice appeared in some form in all of the undergraduate nursing curricula (see *Chapter 5*). Participants frequently commented on the amount of discussion that occurs within faculties about the placement and intent of research subjects within their curriculum, as well as the presumed amount of clinical knowledge required for a student to relate to the notion of applying research to practice.

Finally, there was comment on the general nature of academy and nursing and a sense among some opinion leaders that nurse academics are still generally unprepared for teaching EBP:

> … Sadly, I'm not sure that academics by their nature are necessarily interested in the real world of practice … They each have to supposedly 'research', and their areas of interest are vast and varied, and they are self-interested people by nature …Their teaching style is not consistent with an enquiry-based approach, which suggests that students have to find out for themselves. *(Academic)*
>
> … teachers in the university schools of nursing do not understand what evidence-based practice is about. There is this naïve view that it relates to Cochrane and it's all about RCTs [randomised controlled trials], its medical dominance and nursing should stay well away from it because we're interested in the humanities and social sciences, and you can't do that from an RCT … Most of them [nursing lecturers] have actually studied education, actually, or one of the social sciences. So they're not clinically in touch. They're not on top

> of the literature in their teaching area. Their interest is in the processes of learning and they see teaching as content free – they see it as a process. *(Leader)*
>
> … the evidence for our practice prior to becoming a fully fledged university discipline … our research has been entirely, our evidence-base has been entirely dependent upon what psychologists, sociologists, biomedical scientists, epidemiologists and doctors do, and if something nice drops off the edge, we grab it …Teaching something thoroughly and deeply relies on the fact that the person teaching it themselves has a thorough and deep understanding … and that's been a lot of the problem for us, you know, a lot of this confusion … about what is evidence and what is evidence-based practice. *(Academic)*

Evidence includes research and other forms of validated input: Categories C and D

Categories C and D represent a different conceptual ordering in the structural aspects of understanding evidence for EBP. While this *collective intellect* is more inclusive, in that it describes evidence as coming from a variety of sources (including research), evidence is viewed only from the internal perspective of nursing. Participant focus is on what evidence means within the context of nursing practice, not on what using evidence in nursing practice is trying to achieve (presumably the best outcome for the patient):

> I've often described nursing as being a bit like opera – where you know what the cast is and you know what the plot is but you can have different sets, different artists, a different combination of artists, a different conductor, whoever, will give you a different kind of experience but it's still the same opera. And it relies on a basic script, you know they play the same notes, they sing the same song. But what you experience is quite different according to who's performing it. And what are the rules of evidence for that? (*Anonymous*)

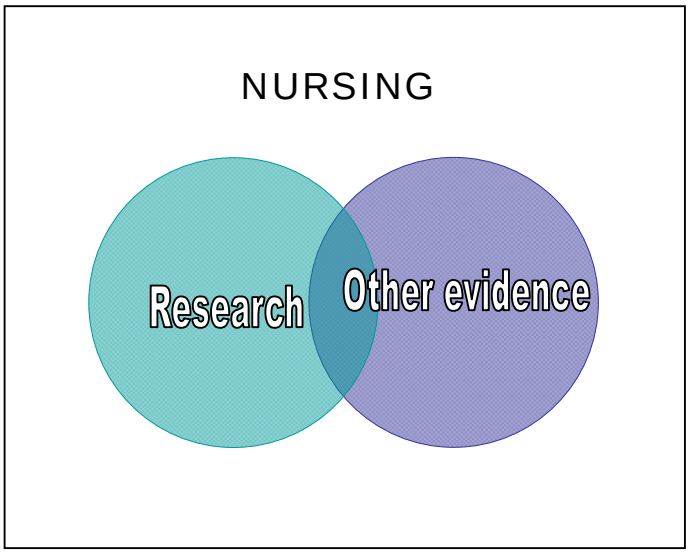
Limiting the focus of the meaning of evidence to the context of nursing practice also demonstrates how the language of EBP can be used as a means of external power and control. One opinion leader stated:

> [there is a] … failure to recognise the level of intimidation, use of words they haven't grown up with … nurses feel anger and switch off. It's almost a language of abuse … We almost encourage them to be overwhelmed. *(Academic)*

And again, the interplay between the language of research and power in terms of the nature of nursing and the qualitative versus quantitative (or research methods) debate:

> There is a hierarchy of knowledge …the way people value research is to say that mathematics and objective means are the ways of saying with some degree of certainty that there is stability in our knowing, that we can have … faith … in what we bring forward as so called of truth, in inverted commas. I think you can call it any name you like, but if this is trying to say that the only true test of knowledge is through objective means it won't make a bit of difference because we'll just keep on finding other words until the day comes when there is respect from both sides …There is a real tendency to make quantitative superior over qualitative … you could change the impression that there is truth. *(Academic)*

Figure 4.2: Conceptual view of Categories C and D



What distinguishes the *collective intellect* of the grouping represented in Figure 4.2 is the notion that whatever form evidence takes, it must be 'legitimised' or 'validated' in the nursing context before it is applied in EBP. The concept that evidence could represent different forms of 'truth' in nursing was accompanied by the notion that truth is not a constant. Truth cannot be tied down or measured, and is different for people in different contexts, especially within the context of nursing. Nursing was described as 'fluid', relying on the therapeutic value of the human presence and interpersonal relationships. It was suggested that as the intimate and caring work of nursing is difficult to measure (category C in Table 4.2), EBP is not always applicable to nursing practices.

> …There are forms of evidence which are methodologically very sound and to some extent represent almost pure forms of evidence…but nursing is much more messy than that, it's got more open boundaries. It's more fluid, more contextual, it's more spontaneous. *(Anonymous)*
>
> … each client is an individual with a unique social, psychological and biological context … as an ecological situation…the nurse needs to make a decision about the best relationship between those things and the care of that person. *(Academic)*
>
> … but our scope of practice is 24-hours a day … with people who are in an evolving situation of one kind or another, related to health or illness … And this evidence-based practice movement has to come in as something that helps with that fluidity and that creativity, and not be another oppressor or another 'have to' or another rigid piece of a system that boxes them [nurses] in. *(Clinical Chair)*

What counts as evidence within the context of nursing practice was another area in which variation was apparent (category D in Table 4.2). Some opinion leaders regarded the experience gained by a nurse

over time as a legitimate source of evidence. Other legitimate sources of evidence named within the context of nursing were a woman's plan for childbirth, an ethical or religious position, or choices around dying. This variation is evident in the following two quotes, which again illustrate ways of understanding evidence based on research method (or more specifically, a qualitative and quantitative method debate):

> … I like technology, I like dealing with machinery and I like looking at figures and that probably then goes back to my preference for the positivist tradition with research … because to me that somehow seems less cluttered by people's views and emotions and subjective influences. *(Academic)*
>
> … There are some things nurses do … that are un-researchable. What difference does a smile make for example? It'd be difficult to research it, you know, the degree of smileness and all that, you know? And you end up sort of saying, well you, in researching it you've lost the essence of it, and so, and I think that's where the qualitative people come to the problem. *(Academic)*

In understanding evidence from within the context of the nursing profession, one Academic described nursing as "aspiring to a modified medical strategy". Another stated:

> I think we've jumped onto it [EBP] to the point of wanting to be validated, you know, authenticated through the same movement that medicine use, rather than … saying, well, that's interesting – this is our – this is how *we* understand it. *(Leader)*

For some, this aspect of EBP is seen as paradoxical – both the solution and the problem. EBP is understood to be about getting the best answer that someone else (such as another discipline) provides for

nursing, giving nurses yet another excuse not to determine their own questions (and answers) for nursing practice:

> … by and large, nurses … are doing research … involved in research, but I don't believe they are empowered through that process … Don't get me wrong, but it seems to me that the questions that get answered often in those scenarios are not questions that bother nurses, they're questions that bother doctors that nurses help them solve. *(Leader)*

In another opinion leader's view, a workforce with diminished self-esteem and a sense of lack of worth is "extraordinarily vulnerable to people selling snake oil" (*Anonymous)*. Another felt that for many nurses, EBP was about maintaining comfort zones. They described evidence as becoming 'co-modified' and 'cultish' like other aspects of health care, and one opinion leader cautioned:

> …. we have to be really careful … that [EBP] is something that grounds and embeds our practice in knowledge … not something that we are competing about or marketing or excluding other very good information. *(Clinical Chair)*

Opinion leaders' prior experience with certain clinical specialties was often relevant to whether they perceived other disciplines to be competitors or colleagues in implementing EBP. Largely, this appeared to be related to the degree of autonomy permitted by their role, and the nature of the teams they had previously worked with, for example:

> [in the CCU] … there seems to be a more respectful relationship within the multidisciplinary team there and I think it is fundamental to good research, to be able to implement research findings into practice. I think the idea that nursing can stand outside other members of a health team, look at it's so-called practice (which I, I don't see as carve-offable), and then implement things that are

> meaningful in terms of a patient trajectory without reference to, you know, the VMO [visiting medical officer] or whoever it is….it is an intertwined endeavour. *(Academic)*
>
> … when you're 500 kilometres from Darwin, you're probably making decisions on illnesses that a general practitioner in a city would never make … [but] some nurses are just used to taking orders. *(Academic)*
>
> If you look at why specialties such as diabetes do have a strong culture in nursing research…its because of the nature of the teams … the teams were generally brought together around an endocrinologist or general physician who had a particular interest in diabetes … they were interested in research … and so, they mentored, rightly or wrongly, the nurses, and then that gave the nurses enough skills to be able to go and do their own research. *(Leader)*

The kind of evidence depends on the clinical context: Categories E and F

Categories E and F in Table 4.2 are qualitatively different from those described above because the meaning of evidence is more externally focused. As outlined in Section 4.3.2, this way of understanding evidence for EBP represents a departure from the somewhat inwardly focused descriptions of evidence as research (as in category A and B), or evidence from the perspective of what it means to the nursing profession (as in C and D). This way of understanding evidence is dictated by the needs of the patient and the context of the clinical decision. Context, as represented in categories E and F, considers the practical realities involved in implementing evidence in practice. The focus is broadened from a single perspective (the individual or nursing view) to incorporate the values and preferences of the patient, their family and others involved in the clinical decision (category E). The expertise of the clinician or team is understood to contribute to

this context, as does the culture and politics of the organisation and the physical space in which the decision is made (category F).

In comparison to the descriptions grouped in categories C and D (above), evidence is still understood to come from a variety of sources, but the difference in category E is that this evidence must be the 'best available' for that patient and that clinical decision. The notion of best available evidence is qualitatively different from that of evidence which has been 'validated' by some ad hoc standard applied within the domain of nursing (category D):

> … Evidence-based practice in nursing is about nurses being able to seek out the best available evidence for what they do in clinical practice and in other areas of practice. In other words, making sure what they do is based on something, to back it up, and not just on nursing mythology or nursing practice that's happened over a long period of time without any real justification for it. So, it's about backing up what you do with the evidence which says, this is the most appropriate thing to do in this circumstance. *(Academic)*
>
> … Evidence-based practice in nursing for me is, incorporating – where it is available, any research, understanding, taking research in it's broadest brush stoke, into clinical decision-making, along with all of the other skills of clinical decision-making which include, okay, so if that's the evidence, is that, is it still the right thing for this person in this place at this time. *(Academic)*

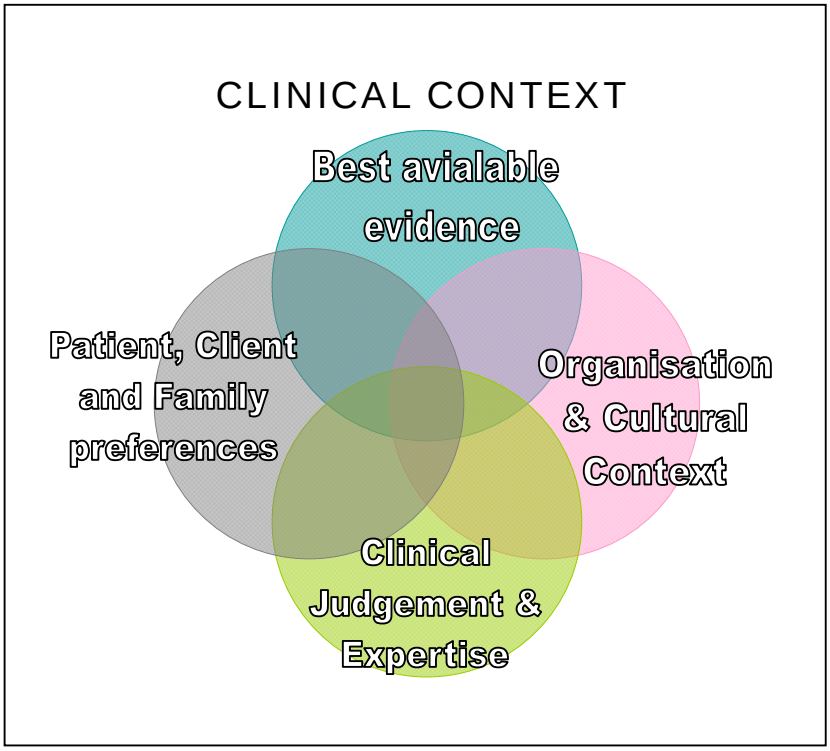
The following quote demonstrates how the *categories of description* build upon each other in the structural dimension. This nursing opinion leader describes his understanding of evidence as coming from a number of sources (including but not limited to research), and occurring in the broader clinical context:

> Sackett[vii] says that evidence-based practice is acquiring research-based knowledge, but in doing so you should take into account client and practice issues and the context. My view is that they are sources of evidence. They are not something that you take 'into account' when you apply evidence from research. For me, evidence-based practice is gathering the evidence from research, from the patient, from your own experience, from the cultural understandings – all of that – and making a decision that's based on all of that, rather than on whim or on tradition. *(Leader)*

In Categories E and F, evidence is no longer understood as a passive construct but is collectively intellectualised as an active choice based on its quality and applicability to the clinical question. This more complex way of understanding evidence for EBP is conceptualised in Figure 4.3 (below). This view is very similar to my own *conception* of evidence-based decision making presented in *Chapter 1* (Figure 1.2), except that I view the 'best available evidence' as preferentially coming from research.

[vii] David Sackett. Author of *Evidence-based medicine: how to practice and teach EBM* and co-founder of Department of Clinical Epidemiology and Biostatistics, McMaster University, Ontario, Canada.

Figure 4.3: Conceptual view of Categories E and F



Category E therefore describes a way of understanding evidence for EBP in which the best available evidence may be selected from any source (or collection of sources) that is relevant to the decision: empirically based knowledge, research, personal or collective nursing experience or even general discourse. Evidence is understood to be just one part of a larger clinical decision-making process which is necessarily driven by the uniqueness of the clinical situation. For example:

> ... I've always believed that evidence for clinical practice consists of research, it consists of the local context (which includes resources and also includes clinicians) and it consists of patient preferences. So you've got the three things and to me, that's evidence for practice, because no one of those components is sufficient evidence alone … and it's the bit in the middle … the overlap between the three circles if you

> want to talk about it diagrammatically – that's the evidence. *(Leader)*
>
> Evidence is anything that you bring to bear on the truth or falseness of a proposition. So, on that basis, evidence for practice can be, can be drawn from quite a large range, and of course, you know, even the narrowest biomedical view accepts expert opinion or case study as a form of evidence, but they weight it very lowly. *(Academic)*

In this regard, category E describes an understanding of evidence voiced by one opinion leader as the "knowledge of most worth" (*Academic)*. I selected this quote as the title of the thesis, as to me, it encapsulates a dominant and consistent finding: the kind of evidence used by nurses in NSW for clinical decision making is the knowledge that is of most worth to the people making the decision, in the particular situation they are in, and for the purposes of achieving the outcome they desire. The value or worth of evidence is judged according to many varied and competing factors. It is not possible to dictate the respective worth of the evidence – only to provide the clinician, manger or teacher the tools for making the decision.

Many nursing opinion leaders recognise the importance of finding and choosing the best available evidence. However, they also understand that the kind of evidence sought is not always available and/or that health professionals may not have the necessary skill or confidence to interpret what is available. This is illustrated by the following quotes:

> … the best possible evidence may be that I did it before and it seemed to work – that might be the best evidence that's available. Now that may be because it's not being researched or it might be because it's not possible to research it. *(Academic)*

> … so it's the professionals themselves, and the public think that they have the necessary skills to actually participate meaningfully in evidence-based practice. I think the vast majority of practitioners don't have those skills at all. The sad thing is that many of them think they do, and that's the reason why sometimes you find people who say 'Oh yeah, I'm changing my practice' and they're basing it on one, on one piece of literature which in itself, may, may be of questionable value. *(Academic)*

Equally, it is recognised that making evidence-based decisions in the context of practice will also depend on the existence of an evidence-based culture in the workplace and leadership for EBP within the profession. Category F is therefore an extension of this way of understanding evidence for EBP within the context of the clinical decision because it adds to the mix the support and culture of the organisation, evidence champions, leaders and role models:

> Critical to nurses being able to practice from their own knowledge, beyond the required power of guidelines and so on … we need understanding within the disciplines that everybody does have their own Act [legal framework] and they have their own responsibilities and accountabilities. *(Clinical Chair)*

Part of the *collective intellect* of this grouping was concerned with how nurses communicate their evidence to others. There was much support for the idea that EBP needs to be modelled by academics and clinicians before it can become part of nursing culture. For example, one academic questioned how many lecturers actually reference the content of their lectures to original sources, or articulate their assessment of evidence in a form that demonstrates to students how they have reached a conclusion. In this way, the content of nursing lectures ends up being attributed to some timeless and revered

'nursing knowledge' rather than original research. This is reflected in the comments of two other academics:

> … There's got to be a point at which [we] make teachers accountable for where it [their evidence] comes from so we can judge its rigor. Teachers should cite sources and clinicians who adapt work should be constantly referring to the literature. *(Academic)*
>
> … I think we contribute to the confusion…as a profession we have been struggling to get the runs on the board in terms of our research … experience with conducting research … being successful in obtaining funding and so on. I'm sure that students we have contact with are perhaps confused by the different information they receive about what is 'sound' [evidence]. *(Academic)*

There were also contradictions among nursing opinion leaders in category F about how much of nursing knowledge arises from combined (multidisciplinary) efforts to provide the best care for a patient, and how much is from nurses own practice-based knowledge. In understanding evidence from the position of the clinical decision, examples were given from practice about nursing skills that are highly valued between nurses and patients but for which there is no research evidence, for example, giving a back rub. This is not perceived to require the same skill as recording a blood pressure, for example, and is not necessarily valued by other disciplines. However, if it were proven through research that back rubs reduce pain or promote healing, they would then be accepted by other disciplines as an evidence-based intervention. Therefore, it depends on the orientation of the clinical setting as to whether this nursing skill is regarded as evidence or not (category F).

Many opinion leaders relayed their experience of being part of a multidisciplinary team and deriving 'evidence' from shared learning experiences with colleagues and patients. However, as pointed out by one opinion leader, there is limited evidence for what it is about nursing that makes a difference to patients:

> Relayed knowledge is used in practice and [we] kept on doing it … nurses have accumulated great wisdom but haven't been very good at explicating what it is, and where they got it from, and how they know it works … We are defiant about saying we make a difference when really sometimes we don't. *(Academic)*

Evidence relates to the broader context of health care: Category G

The final *category of description* in Table 4.2 (category G) represents the broadest way in which opinion leaders understand evidence for EBP. The *structural* and *referential* focus of this category is on the context of healthcare, as opposed to the context of the clinical decision (in categories E and F, above). Within this category, variation occurs between opinion leaders' *conceptions* of evidence as driven by external influences on healthcare (such as efficiency, economics and politics), and doing the right thing for the patient (improving effectiveness and outcome):

> … For too long a lot of health care practices … have not necessarily been based on good sound evidence but have been built up perhaps, by experience … I do support evidence-based practice. I think it is essential because I think it will … improve quality of care for patients. And ultimately, that should be what drives our profession. *(Academic)*
>
> … I'm caught between believing that it [EBP] … is just another trend like the nursing process that we'll get over – and my very strong belief that nurses and other health

> professionals need to really seriously be grounded in what consumers actually need. So when I adhere to the latter view, I think that evidence-based practice, particularly when immersed in policy development, research protocols and research, teaching and learning methods around research, is a really very necessary way to make good judgements and good decisions. *(Academic)*
>
> … The knowledge era … we're in … I think evidence-based practice has, in a sense, come out of that ethos, and I think part of the reason is … we've started to generate knowledge that actually gives us some idea about well, not only what we are doing, but does it work? *(Academic)*

The *collective intellect* of category G also reflects opinion leaders' breadth of understanding about the relationship between evidence, EBP and politics, and how EBP might be used for purposes other than patient care. For example:

> … in healthcare, patients are much more likely to say … 'what are you doing?' … I think that has been a major influence, but I'm not a Pollyanna and I do understand also that politics plays an extraordinary part in what's possible and what's not possible at any moment in time and where research does or does not influence policy is often about the political moment. *(Academic)*

Others believe that EBP (or more specifically EBM) has emerged at a time when it can be seen as a universal solution to all that ails the current health system, and for this reason, has been taken up by nursing with more enthusiasm than is warranted. For example:

> … I have become less ambivalent about it [EBP] as I've got a clearer sense of how we might employ evidence-based practice for what purposes. My real fear, of course, is that we will plug it into everything and it will become a kind of university remedy for a whole lot of things that are troublesome … I think it will come and go like everything else. *(Anonymous)*

> … I often think the whole EBP movement is like a lot of paradigm movements that come in and out … it's taken on by gurus who then make their own little silos and power bases out of it, and it's driven by their views of the world. *(Leader)*
>
> … I think everything has its day, and evidence-based practice is having its day at the moment … I think it's a passing phase … but the underlying meaning of it isn't, I mean it's not new – there's nothing new about the subject. *(Leader)*

EBP was described by one opinion leader as a way of minimising risk and ensuring health resources are not lost on treatments that are ineffective:

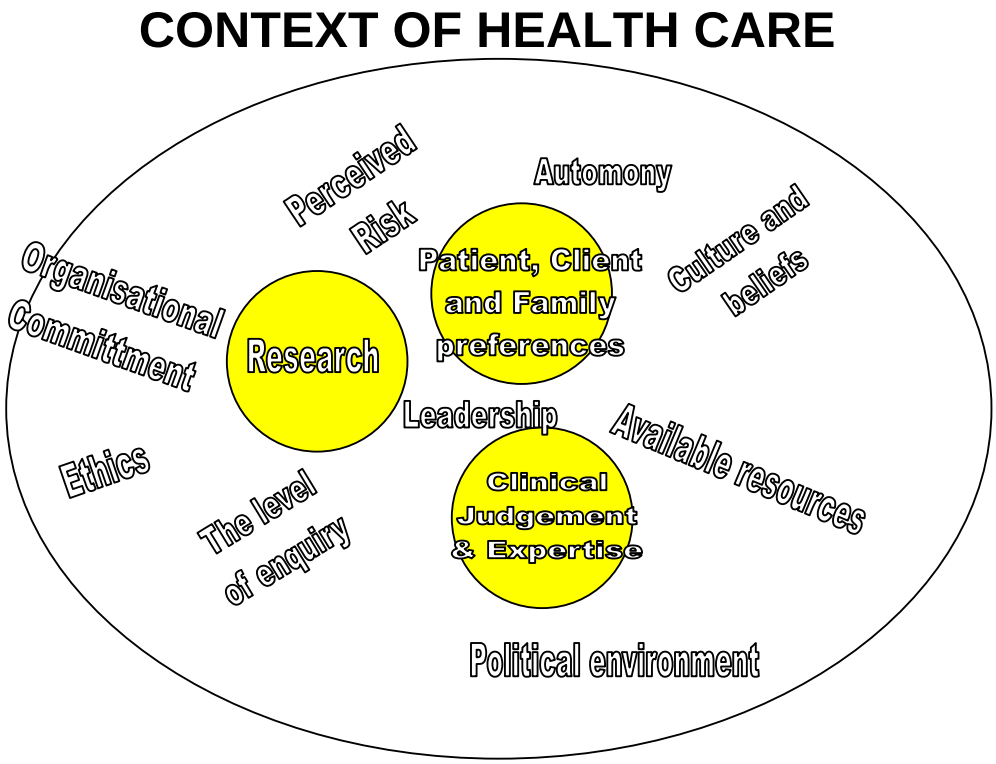
> People don't want to spend money on treatments that don't work and we've got to get the best bang for our buck in terms of health promotion as well – in terms of strategies that actually prevent health problems. So, from my point of view, I have a very narrow definition of evidence-based practice. Evidence is what links exposures to health outcomes and treatments to health outcomes. It's very simple. That's where you get the best bang for your buck. *(Academic)*

The contextual factors offered by opinion leaders as impacting upon evidence-based decision making in the broader context of health care are depicted in Figure 4.4 below.

Conceptually, this figure departs from my own diagrammatic representations of evidence-based clinical decision making in *Chapter 1* where EBP is was firstly represented as a Venn diagram (Figure 1.1 - the intersection between research, clinical experience and the patient) and then as a four-dimensional puzzle (Figure 1.2) to which 'context' had been added. In Figure 4.4 the context for EBP has been broadened even further to now completely envelope the process of clinical decision making within the context of healthcare.

The *collective intellect* of opinion leaders and role models represented by category G describes an understanding of evidence for EBP against the backdrop of the many competing factors involved in evidence-based decisions. This implies that they understand the evidence-based decision maker to be a highly skilled juggler of multiple knowledge sources.

Figure 4.4: Conceptual view of Category G



4.3.4 Internal relationships between *categories of description*

The phenomenographic method used for this study posed the research question:

> What are the qualitatively different ways nursing opinion leaders understand evidence for EBP?

The qualitative differences have been summarised through the selection and naming *categories of description* and illustrated using the language of the participants through directly quoting nursing opinion leaders. The next step in this phenomenographic analysis is to juxtapose the *categories of description* to establish their internal relationships according to their *structural* (the combination of features discerned and focused on by the participant) and *referential* aspects (the lens through which the participant attends to and ascribes meaning to the category). As before, because the *structural* and *referential* aspects of the *categories* presented in the *outcome space* have a specific meaning within phenomenography, they are written in italics in the following text to differentiate these terms from normal usage.

As described above, the *structural* focus of opinion leaders ranged from a somewhat simplistic and internalised view where evidence was equated to research or scientific method (focus on research), to a more practical and externalised view, where the opinion leader focused more on what evidence can do to improve patient outcomes or healthcare in general (focus on healthcare). In between these two ends of the *structural* continuum, some participants demonstrated a different understanding of evidence for EBP by directing their focus towards nurses and nursing, while others focused on the patient and the clinical decision being made.

In Table 4.3, the *structural* aspects of the *categories of description* are shown as a continuum working down the rows of the Table. The *referential* (or meaning) aspects of the categories are contrasted in the

columns of the Table, with the *categories of description* represented by the letters they were allocated in Table 4.2.

In the *referential* aspect (columns in Table 4.3), opinion leaders attended to and ascribed meaning within the *categories of description* in three qualitatively different ways. Although there is a degree of overlap between the columns, meaning was interpreted through opinion leaders':

1. previous experience or exposure to research and/or evidence (and the nature of that evidence);
2. background educational and clinical experiences;
3. past and present experience of the healthcare environment in which they work.

Table 4.3 represents the *outcome space* of this phenomenographic investigation. It demonstrates the ways in which opinion leaders understand evidence for EBP by depicting the internal relationships between the structure and meaning of the *categories of description*. Table 4.3 therefore summarises the full range of ways in which evidence for EBP is understood by nursing opinion leaders in NSW.

Table 4.3: Internal relations between *categories of description*

	***Referential* Aspect** **(the lens through which the participant ascribes meaning to the category)**		
***Structural* Aspect** **(the features within the category focussed on by the participant)**	Previous exposure to research and evidence	Background in nursing education and practice	Experience of the health care environment
1. Evidence is the same as research FOCUS = RESEARCH & METHOD	**A**	**B**	
2. Evidence includes research but it can also include other forms of validated input FOCUS = NURSES & NURSING	**C**	**D**	
3. The kind of evidence used depends on the context of the clinical decision FOCUS = PATIENT & CLINICAL DECISION		**E**	**F**
4. Evidence is understood within the broader context of health care FOCUS = EFFECTIVE HEALTH CARE			**G**

Categories of description for evidence

A. Evidence is synonymous with research and scientific method.

B. Knowledge or skill in evidence is equivalent to knowledge and skill in research.

C. Other forms of evidence are relevant to nurses or nursing.

D. The kind of evidence required depends upon the context of nursing practice.

E. The best available evidence is used for the clinical question being asked.

F. Evidence translation relies on support for EBP in the clinical setting.

G. Evidence is used for EBP which is a means of improving patient outcomes through effective and efficient health care.

It has previously been demonstrated that Categories A and B share a common focus within the *structural* domain as they depict an understanding of evidence that is synonymous with research and method. However, it is opinion leaders' previous exposure to research and/or evidence, and specifically the nature of the evidence presented to them, that appears to define the meaning or *referential* aspect of these categories. That is, opinion leaders' previous exposure to, or experience with, different forms of research and evidence within nursing that influences the meaning they ascribe to evidence for EBP.

Categories C and D are structurally related in the *outcome space* by their focus on evidence from the perspective of nursing. In these categories, ways of ascribing meaning to evidence appear to be related more to the background education and clinical experience of the nursing opinion leader (*referential* aspects in Table 4.3). Evidence seems to be understood through the lens of the opinion leaders' own experiences of nursing (*referential* aspect) and their attention to how evidence is applied to the practice of nursing (*structural* aspect).

Categories E and F are related in the *structural* continuum (Table 4.3) as they reflect an understanding of evidence that is determined by the patient and the context of the clinical decision. Within these categories it appears to be opinion leaders' previous experience of EBP within the broader clinical environment that defines their meaning of evidence. The practical realities of applying evidence to practice are attended to in the opinion leaders' descriptions because their *referential* (meaning) aspect has probably been defined by actual experiences.

Finally, Category G represents a way of understanding evidence for EBP in which structure and meaning are internally related within the wider aims of EBP to improve patient outcomes through increased efficiency and effectiveness. This is demanded by the nature of current healthcare systems, and again the ascribed meaning of evidence (Table 4.3) is likely to have been shaped by the opinion leaders' practical experiences of bringing evidence into the clinical or educational domain of their workplace.

4.4 Linking the views of opinion leaders with survey findings

This thesis has so far used two different approaches to explore NSW nurses' knowledge and understanding of evidence for EBP: surveys of pre- and post-registration nurses and interviews with nursing opinion leaders. Questions were included within each of these two studies to make it possible to identify commonalities between them. Both groups were asked to respond to two similar questions included in the survey (Appendix B) and in the interview guide (Appendix C). The first of these two 'linked' questions asked respondents what they understand the word 'evidence' to mean (in the term evidence-based practice), and the second asked what percentage of current clinical nursing practice the participant believed to be based on evidence. Opinion leaders were also asked to comment on how EBP or research is currently taught at their own University (if an academic), or if not an academic, whether they had any general thoughts on the way EBP or research is currently taught to nursing students (Appendix C). During the interviews, opinion leaders were prompted to offer

suggestions on how they would like to see research and EBP taught, particularly at undergraduate level. Responses to these questions are presented below, where they are contrasted with survey results from *Chapter 3*.

4.4.1 Shared meanings of evidence

A range of definitions and ways of understanding evidence are apparent in both studies. While it is not possible to explore meaning within NSW nurses' written responses to questions on the EBP survey, it appears that the two dominant definitions of evidence derived from the survey responses (*Chapter 3*, Table 3.5) do overlap with some of the categories (A-G in Table 4.2) derived from the opinion leader interviews. Similarities between the meaning of evidence for NSW nurses and nursing opinion leaders are: evidence arises from a controlled or rigorous research process and evidence is that which has been proven in practice to improve patient outcomes.

In the survey, seven broad themes and an eighth grouping representing a mixture of other less common responses were identified (*Chapter 3*). Using the words of NSW nurses, themes of evidence in the survey responses ranged across a formal or rigorous process (such as research or scientific method); evidence being a combination of research, clinical expertise and patient values; and evidence being that which has been proven in practice to improve patient outcomes. Opinion leaders' ways of understanding evidence for EBP can be regarded as generally similar to the range of views offered by survey respondents, given that they also ranged (albeit

more widely) from a focus on evidence being the same as research to understanding evidence within the broader context of healthcare.

4.4.2 What percent of nursing practice is based on evidence?

This question was presented as a numerical (percentage) scale in the survey (Appendix B) and was asked of all opinion leaders during their interview (Appendix C). Although all opinion leaders responded to the question, a third (30%) were not prepared to nominate a figure for the percent of current nursing practice based on evidence because of the idiosyncrasies of clinical context. For example, one opinion leader stated:

> I think I can say that it would be between 90 to 95 in a particular aged care facility that I know exists, but I can also say that its probably closer to 20% in an acute care setting that I also know … it's not only the work environment, but the learning environment and work setting that determines it. *(Academic)*

The variations apparent in the way opinion leaders understand evidence for EBP and the range of views offered by NSW nurses in the survey are also reflected in responses to this question. Another opinion leader who was not prepared to place a figure on the evidence-base for nursing practice stated:

> My definition [of evidence] would be so broad in terms of feasibility, appropriateness and effectiveness, then I'd say 75%. But that's not research. That's about my knowledge, and that comes from many sources. *(Academic)*

Clearly it depends on the individual nurses' definition of evidence as to how they will determine what percentage of current nursing practice is based on evidence. For example, two opinion leaders

elected to give a percentage estimate for nursing practice based on evidence 'from research', and a second value based on their own definition of evidence. In the table below, the estimate for practice based on 'research' is used.

Table 4.4 contrasts opinion leader responses to this question with results obtained from NSW nurses responding to the survey. Results in the table are presented as the percentage of respondents selecting a particular category of nursing practice based on evidence (as presented in Table 3.4, *Chapter 3*). As these are categorical data, the summary of responses is presented as a mode, or the most commonly occurring response category.

Table 4.4: Views on the percent of nursing practice based on evidence

What percentage of clinical nursing practice is evidence-based?	**Pre-registration nurses** *From survey* **n=257 (%)**	**Post-registration nurses** *From survey* **n=126 (%)**	**Opinion Leaders** *From interviews* **n=23 (%)**
0, 10 or 20%	5.1	6.5	34.8
30 or 40%	17.5	17.1	4.4
50 or 60%	30.7	26.8	13.0
70 or 80%	38.9	36.6	8.7
90 or 100%	7.4	12.2	8.7
Did not specify	*.4*	*.8*	*30.4*
MODE	**70%**	**70%**	**20%**

It can be seen from Table 4.4 that for the 16 opinion leaders who were prepared to make an estimate of the percent of nursing practice based on evidence, their modal response was much lower (20%) than that of pre- and post-registration nursing students (70%). This is an

interesting finding given that the pre- and post-registration nurses constitute a group who are closest to the area of clinical practice.

Again, as an illustration of the variation between opinion leaders' ways of understanding evidence, one estimate of the percent of nursing clinical practice based on evidence was almost zero:

> I'd place it [the percentage] almost at zero as far as individual nurses are concerned because I don't believe that individual nurses do think about their practice in that way … They do have practices based on evidence because that's practice that they have been introduced to in other ways, not realising that … it's supported by evidence … but simply, they've been told to do it. *(Leader)*

While another was (a qualified) hundred percent:

> I think every nurse practices to the best of their current knowledge, so the answer would be 100%. Is the knowledge they have the best and most current knowledge? That's the responsibility of the system. Could they quote chapter and verse where evidence comes from? Probably 50% or less. But the quoting it or practicing it wouldn't be congruent I don't think. *(Academic)*

4.5 Opinion leaders' views of undergraduate education for EBP

All of the nursing opinion leaders interviewed for this thesis had strong opinions on the current undergraduate nursing program. All made reference to the consequences of the move of nursing to the higher education sector and there was general consensus (among those interviewed) that the current undergraduate nursing curriculum is restrictive and protocol driven, focused on creating conformity, and disconnected from the demands of the current health system. Many of the opinion leaders made reference to the 'hidden'

curriculum, meaning that what is written in the curriculum and what is actually taught are two different things. The notion that educators have to trade or vie for curricula space was also frequently voiced. Opinion leaders emphasised that the growth of a nurse happens after they graduate and reference was often made to keeping expectations realistic:

> I think we have three years to produce a beginning practitioner, that's what most people forget. They think the three years is, that's when you're the finished product as a nurse. *(Academic)*

Those who felt that university education for nursing had encouraged free thinking beyond what was previously offered by hospital-based programs were also aware that beginning practitioners enter organisational structures in Australian healthcare that remain hierarchically organised and are generally unsupportive of 'free thinkers'. The practices that are modelled and the policies and procedures which govern this practice can eventually overcome any individual sense of enquiry, curiosity or confidence to question the status quo.

At least one-third of the opinion leaders interviewed expressed concern at the insufficient length of the undergraduate program, particularly with regard to allowing time to experience the clinical setting and prepare for specialty practice. Prior to introducing the Bachelor of Nursing in NSW universities, nurses could prepare for registration as a general nurse, a mental health nurse, a paediatric nurse or a developmental disability nurse. Currently in NSW, the undergraduate midwifery program which commenced in 2005 is the

only specialist education on offer by direct entry other than the Bachelor of Nursing or Bachelor of Health Sciences (Nursing).

4.5.1 Research and EBP in the undergraduate curriculum

Throughout the interviews, there was support from a small group of academics for preparing undergraduates to become 'research minded'. Encouraging students to be 'mindful', but not necessarily 'critical' of evidence is based on the assumption that undergraduates do not have the necessary skill or experience with which to interpret research or other evidence in a critical way. After all, as some opinion leaders pointed out, many of the fundamental principals of nursing stay the same regardless of the context of healthcare (for example caring, touch and advocacy) and not all nurses are (or need to be) researchers:

> It is only when something falls out of line or a wound doesn't heal that there is a need for them to go to the research – otherwise nurses are busy doing nursing. (*Academic)*

The idea that you can build 'mindfulness' as you build clinical knowledge parallels a current trend in nursing to make senior or specialist nurses the champions or knowledge brokers of research findings. Clinicians are then left to the work of nursing. As one clinical chair stated:

> If you give a clinician knowledge, their practice will change – so you don't have to tell them evidence for practice, you have to give them the knowledge – that's our job as researchers, to provide knowledge to clinicians. *(Clinical Chair)*

In a practical sense, becoming 'research minded' consisted of teaching students to interpret what research and other information is relevant

to their clinical context and preparing them to use this information in the frequent clinical decisions they will be called upon to make. This was described as:

> … getting them robust in the face of … this kind of overwhelming environment where information is just awash. *(Anonymous)*

But others were not sure that this is what actually happens in undergraduate programs:

> … there certainly are a number of students who are just frightened by the word research. I know a lot of them say "I'll get through this subject and I hope that's the last I see of it", you know, [they] see it as a hurdle to get over. It's something that's maybe too hard, sadly not so relevant, so I think we have the responsibility to make it relevant. *(Academic)*
>
> … I think introducing research into third year is crazy. "This is research!" You just get garbage in and garbage out because they don't understand how you measure quantitative and qualitative research … all it does is turn them off, confuses them. *(Leader)*

The pragmatic view was that students learn research in the classroom but that there is very little opportunity for practical work associated with this learning. For example, there are no opportunities for clinical placement in a research unit or EBP centre. This sets an expectation that research and evidence are related more to study and education than to clinical practice.

> … There is pressure on students … to be more task orientated when you get into the workplace … What I see happening … is that someone else is going out there and finding what best practice is … and working out a clinical pathway and putting that out there and saying "this is best practice, follow this". That doesn't lead [to] the individual developing a sense of making sure they're basing their practice on whatever current

> evidence is because they are still relying on someone to tell them. *(Academic)*

4.5.2 Opinion leaders' suggestions for teaching EBP

Eleven of the 23 opinion leaders participating in the interviews were directly involved in providing undergraduate nursing education. This included four Deans, four Heads of School and three program co-ordinators of undergraduate nursing programs. As opinion leaders, the remaining participants are also likely to have an influence on education for EBP through more indirect means, such as determining clinical needs assessment and providing advice to government and nursing regulatory bodies. A question asked of nurse academics and other nursing opinion leaders, respectively, was:

> (a) How is evidence-based practice or research currently taught within the undergraduate curriculum at this University?
> *or*
> (b) Do you have any thoughts on the way EBP or research is currently taught to nursing students at undergraduate level?

In considering undergraduate education for EBP, a particularly common theme in the interviews related to the amount of information and knowledge nursing students are confronted with, and the importance of building their skills around knowledge management. This is a problem faced by any undergraduate student. Another recurrent theme was about the importance of learning to question or enquire. However, on prompting it became apparent that opinion leaders also held different notions of what enquiry actually meant in the context of the undergraduate program. For some it was learning

to question practice or practices, for others it was about encouraging nurses to reflect on their own practice. The practical realities of clinical education were also never far from the minds of opinion leaders:

> … it's not cost effective to have small groups … that allow individuals to develop their understanding of how they apply evidence in practice, to problem-solve clinical situations as undergraduates – to think … The big difficulty is when we put out clinical objectives which are based on [Australian Nurses and Midwives Council] competencies and send them out with our students [to clinical placements], most of the registered nurses don't have a clue what we are talking about. *(Academic)*

It was not surprising to find that opinion leaders' views of what they would like to see taught with regard to EBP mirrored their varying individual *conceptions* of evidence. For this reason, it is not possible to offer a perfectly consensual 'wish list' for EBP education on their behalf, but it is possible to outline some of the common views and suggestions they offered during the interviews.

In the following table, opinion leaders' suggestions for teaching EBP to undergraduate nurses are summarised with reference to what they think nurses need to know about EBP, and how they believe this learning might be facilitated. The two columns are not necessarily related but present a range of suggestions offered by nursing opinion leaders during the interviews.

While the importance of learning skills for EBP was generally agreed among nursing opinion leaders, there were some differences of opinion in how this learning might be facilitated. For example, we know from the results reported previously that there are differences

in language, definitions and understandings of evidence. We also know that some opinion leaders feel that while it is important for nurses to be 'aware' of research, they should be taught to rely on their own practice knowledge for EBP. Being 'research minded', 'research literate' or 'critical consumers of research', as was described by some opinion leaders, implies that nurses already understand that research is a part of evidence, but it does not equip them with any particular skills for applying this research to practice.

Table 4.5: Opinion leaders' suggestions for EBP in undergraduate education

WHAT undergraduates need to know for EBP	HOW to facilitate their learning for EBP
1. Know where to go to find information on a topic 2. Know how to access the information 3. Know how to appraise and synthesize the information 4. Know how to interpret the information 5. Have an idea about applying the information in practice	• Use plain and consistent language for research and evidence derived from other sources • Encourage greater use of interdisciplinary teaching and learning • Ensure educators are aware of their role as a guide, mentor and champion of EBP • Use actual clinicians within a small group learning context to develop an understanding of EBP relative to the clinical situation rather than rote learning the concepts • Utilise opportunities provided by institutionally based research, practice development or EBP centres to allow interested students to undertake practical experience in the units • Make the commitment to EBP explicit by encouraging educators and others to articulate the source or sources of evidence for their knowledge • Integrate EBP into all subjects across the curriculum as a means of scaffolding or nesting knowledge rather than expecting students to gain an understanding from a single subject

Along similar lines, others felt it was more important to teach nurses how to balance the large amount of knowledge that already exists in nursing, rather than teach new knowledge. In this regard, some opinion leaders felt that it would be of more benefit to provide undergraduates with knowledge of EBP resources – to teach them how to access people (knowledge champions), places (EBP units or research centres) and publications (such as evidence summaries where the evidence has already been put into sizeable and relevant chunks). Still others felt that dogmatising a reflective process by reducing it to the teaching of research or skills for EBP limits the growth of nursing and stifles the inclusion of new concepts into the profession:

> We want them [students] to be enquirers of their own practice – reflective people. We don't want them to become professional, autonomous enquirers who pursue formal research … we don't want to produce an army of nurses who are bored and frustrated because they don't have time to do their next RCT [randomised controlled trial]. *(Leader)*

The tension between approaches to teaching research and EBP is also reflected in differences of opinion around whether these should be fully integrated across the curriculum or offered as single subjects. Even where there was agreement that education for EBP can be offered through a single subject, there was constant banter about whether the subject should be offered in first, second or third year. The following examples illustrate the degree of uncertainty that still exists around the placement of research or EBP subjects in the undergraduate curriculum:

> I'm not sure I would give them another research course in the three years. I think that I would just expect in every single course for them to be able to refer to research and to be able to demonstrate that they actually understand the methodology and can give you a reasonable critique. *(Clinical Chair)*
>
> We were teaching research over and over without necessarily making it more complex and I didn't see why we taught it [research] three times in an undergraduate curriculum. *(Academic)*

Assessment of EBP education is another area in which differences in how to facilitate learning for EBP arise. Opinion leaders were polarised into those who believed it was a good idea to cement the research knowledge of undergraduate nurses by asking them to design a research project as part of their assessment, and those who were completely against this notion. I believe this argument translates into whether opinion leaders' think that undergraduates need to be know how to 'do' research or whether they need to know how to 'use' it in their practice.

As has been a recurring theme throughout this thesis, the interviews with opinion leaders did not reveal an agreed approach to teaching EBP in the undergraduate nursing curriculum. In general, the opinion leaders' suggestions for teaching EBP to undergraduates reflected their own view of the world and their own way of understanding evidence for EBP. It could be said, however, that in the face of overwhelming amounts of knowledge for practice, opinion leaders favoured an approach to teaching EBP that moves away from putting all the knowledge into student's heads, to one which brings efficiency to evidence gathering and interpretation through teaching the use of

evidence summaries and/or methods for accessing EBP champions and knowledge brokers. While this conclusion fits well with findings from the survey, which demonstrated NSW nurses' preference for evidence summaries and guidelines for implementing evidence into practice, it still does not take account of the fact that a range of views and approaches to teaching EBP in undergraduate nursing programs currently exist.

4.6 Limitations of the study

4.6.1 Opinion leaders

In conducting this study, some assumptions were made about the role of opinion leaders in influencing members of the nursing profession. A Cochrane review looking at the effect of opinion leaders on healthcare practices[86] points out that administrative leaders are not necessarily opinion leaders. The Deans of Faculties of Nursing in this study, for example, demonstrate leadership qualities but their opinions may have more direct influence on faculty management decisions than on the content or placement of subjects within a curriculum. The relatively recent move of nursing education to the university sector also means that, unlike some disciplines, many of the leaders in nursing education come from a clinical nursing rather than an academic background. While I believe this to be an entirely appropriate background, nurse academics current positions within the ranks of academia are sometimes compromised in the degree to which they can influence decisions about nursing education within the broader university sector.

The sample of opinion leaders interviewed for this study did however include representatives from all organisations offering undergraduate nursing education in NSW and also included nursing leaders and executives who are directly involved in making decisions on behalf of nurses in NSW. Because of their leadership role, many of the interview participants have also represented nursing at the Federal government level, through participation in national research projects and other health and workforce initiatives such as NHMRC advisory panels, health inquiries, quality and safety initiatives, and workforce and workplace investigations.

4.6.2 Phenomenographic interviews

The strategy of sending a letter in advance, telephoning/emailing[184] and travelling to a convenient location for the interview produced a positive response to interview requests and ensured that the wide range of representatives approached (or their nominee) consented to participate in the study.

An early aim of this study had been to establish consensus on opinion leaders' understandings of evidence and their views on EBP. It became clear after the results of the EBP survey and the first exploratory interviews that establishing consensus on the meaning of evidence for EBP in nursing would be an unlikely outcome. Because of a focus on variation, phenomenography offers an appropriate method for describing the range of ways in which opinion leaders understand evidence for EBP. This method avoids forcing a clearly

varying range of opinions into a tidy box representing 'sameness' or some other central measure of agreement.

Establishing validity in phenomenographic analysis relies on parsimony and internal consistency in the *categories of description* and on the demonstration of concurrence between these and the interview transcripts. In this study, validity was established by quoting examples directly from the interview transcripts and by asking a critical colleague to be involved in the decision on the final *categories of description*. This colleague also successfully sourced results presented in the *outcome space* to the original transcripts. Interestingly, Hyrkäs et al.[180] propose that peer evaluation of interviews may be inappropriate to phenomenographic research. This is because phenomenography is an approach in which the researcher's interpretation of the qualitatively different ways a phenomenon is experienced by others is recognized as part of the method. However, as the founder of phenomenography (Ference Marton) has proposed otherwise[165], and peer review of this kind is common to qualitative methods in general, I elected to use another researcher to establish the validity of the categories in this study.

4.7 Chapter summary

The aim of this study was to explore the ways in which nursing opinion leaders understand evidence for EBP. The results demonstrate that opinion leaders' understanding of evidence ranges along a continuum. At one end, the *structural* aspect of evidence is placed as synonymous with research and method, while at the other

end, evidence is placed within the broader realm of EBP and its capacity to offer more efficient and effective healthcare. Not surprisingly, ways of understanding evidence for EBP are also influenced by past and present experiences (as described in the *referential* or meaning aspects of understanding). These include previous exposure to research or other forms of input represented as, or understood to be 'evidence', as well as the opinion leaders' background in nursing education and practice, and their exposure to EBP in the setting in which they work.

For some opinion-leaders, the concept of evidence seems to be self-evident in nursing practice, while for others, evidence-based decision making is regarded as a highly complex skill requiring simultaneous attention to many competing demands. Although nursing opinion leaders seem able to agree on some of the skills required for EBP, their own different ways of understanding evidence for EBP are reflected in their various suggestions about how to facilitate EBP education for undergraduate nursing students. Some of these suggestions are incorporated into a conceptual framework for implementing recommendations for EBP education in *Chapter 6*, but first, the next chapter describes how documents relating to research subjects offered in NSW undergraduate nursing programs present words and concepts related to research and evidence.

Chapter 5

Documented descriptions of research and evidence

5.1 Chapter overview

The previous two chapters have explored how nurses and nursing opinion leaders in NSW define and give meaning to evidence for evidence-based practice (EBP). Findings from the EBP survey and opinion leader interviews suggest that differences in the interpretation and meaning of words used for EBP, and the inconsistent use of language around research and evidence may be influencing the way in which evidence for EBP is understood. As previously outlined in this thesis, current Australian competency standards determine that on entry to practice, nurses and midwives will use research and provide evidence-based nursing care to people of all ages and all cultural groups, while practicing within an evidence-based framework.[1,2] Competencies establish a standard for practice leading to registration as a nurse or midwife in Australia, and universities and colleges providing undergraduate nursing and midwifery programs in NSW structure their curriculum in order to meet these national standards.

In this chapter, documents issued by providers of undergraduate nursing education in NSW are analysed with the aim of determining how words and concepts relating to research and evidence are used and presented. The rationale behind this study is that the way in which a school or faculty promotes or communicates EBP is likely to influence the way EBP is perceived and taught by staff, and

understood by students.[6] In order to prepare undergraduate nurses to meet entry-level competency standards for EBP as outlined above, it would seem essential that EBP be promoted as a fundamental educational objective of the faculty or school.

The method of content analysis is used to explore the final research question posed by this thesis. This question asks how the concepts of research and evidence are being articulated and communicated to prospective and current nursing students through text-based media. Three sets of documents issued by the ten providers of undergraduate nursing education in NSW (identified in *Chapter 4*) are examined for their use of words relating to research, evidence and EBP. As the undergraduate midwifery program had not yet commenced in NSW at the time of this study, documents relating to this course are excluded from the analysis.

5.2 Design and method of content analysis

5.2.1 Applying content analysis to educational documents

Content analysis is a general term which covers a variety of techniques for making inferences from various forms of communication such as film, television, interviews, pictures, photographs, documents and text. Content analysis is commonly used for measuring the recurrence of a particular word or theme in a document or communication. This word or theme is labelled, recorded and counted.[185] Busch et al.[186] define the method of content analysis as simply consisting of establishing a number of different categories, and counting the number of times items relevant to each of

the categories occurs in a particular set of data. This can be contrasted to a more investigative approach to the analysis of documents or text (sometimes called discourse, relational or semiotic analysis), in which the investigator searches beneath the words or themes to uncover their meaning and relationship to each other.[176,186]

The analysis of content can be based on a number of measurements including the frequency of occurrence of a specified unit; the amount of space allocated to a unit within the text; and the strength or appearance of the unit. In this study, the units of analysis are words relating to research and EBP. The analysis consists of counting pre-identified words within three sets of documents issued by the ten educational institutions offering an undergraduate nursing program in NSW, and allocating these words to categories. This enumerative form of content analysis is used to investigate the fourth and final research question of this thesis:

> 4. How are the concepts of research and evidence being articulated and communicated to undergraduate nursing students?

The objective analysis of the appearance and use of words within these documents attempts to explore intentions, focus and trends in the way EBP is communicated by these educational providers.

5.2.2 Enumerative content analysis

Enumerative content analysis does not permit meaning to be attributed to the words that are selected for analysis. The occurrence of the words is simply counted (enumerated) and then summarized in a simple frequency analysis.[176] This process maintains a characteristic

feature of the enumerative method: data are collected as a complete entity prior to the analysis, with the researcher adopting a distant and objective position. Results from the two previous studies (*Chapters 4* and *5*) suggest that inconsistencies in the use of language around research and evidence might be reflected in the selected documents. The results of these studies therefore assisted in the identification and selection of words and categories for this content analysis. All words and categories were defined in advance. However, it is acknowledged that the initial identification and allocation of these words to categories is a somewhat subjective process in comparison to the general objectivity of enumeration. Once enumerated and allocated to categories, the frequency of the words is contrasted across the ten providers offering undergraduate nursing education in NSW.

5.2.3 Sourcing education documents

As discussed in *Chapter 4*, the websites of all universities and colleges offering undergraduate nursing education in NSW were accessed for the 2004 academic year. This was initially undertaken to identify the Deans, Heads of School, and other relevant program or curriculum coordinators for opinion leader interviews. At the same time, links to the undergraduate nursing program permitted online searching of the number, placement and content of subjects relating to research or EBP within the nursing course. In addition, interview participants at educational facilities were asked for a copy of the research or EBP subject outline from their school or faculty. This was asked in the context of discussion about the current and possible future content of research or EBP subjects in their undergraduate curricula.

The three sets of documents examined from each educational provider were:

1. School or faculty homepages

When students search a university site online, they generally receive an introduction to the school or faculty through the 'welcome' or 'homepage' on the website. This site usually presents an overview of the philosophy of the nursing program, and occasionally a mission statement. Text from the homepage of each university or college offering undergraduate nursing education in NSW was printed for this analysis.

2. Brief subject outlines

These four- or five-line descriptions found in the online student handbooks give a brief outline of the research or EBP subject offered as part of the undergraduate nursing program. The subject briefs were printed and used both for the purpose of clarification during interviews with educational opinion leaders at their respective institution, and as a text for the content analysis. This process also made it possible to determine the position of the research subject within the nursing course, for example, whether it was offered in first, second or third year.

3. Full subject outlines

As only brief descriptions of the subjects were available in the online handbooks (above), a full copy of the research or EBP subject outline was requested of all interview participants. Subject outlines generally include a description of the subject, a list of learning outcomes, and

assessment items. Only subjects offered during the full-time equivalent of a three-year undergraduate nursing program were analysed. Text outlining details of recommended textbooks and the content of tutorials (if present in the outline) was excluded from the analysis.

Subjects included in the analysis were those offered either on campus or in flexible delivery modes, in undergraduate nursing programs during 2004. In most cases the same research subjects are offered for registered nurse conversion, accelerated or post-registration degree courses. However, these and any additional subjects offered as part of a nursing (honours) program are excluded from the analysis. As the only undergraduate midwifery program in NSW did not commence until 2005, documents relating to this course are not included in the analysis, nor are courses or subjects offered outside NSW. The three sets of documents are therefore collectively intended to be a textual representation of the educational objectives of NSW schools and faculties in terms of their description of the subject (or subjects) offered in research or EBP during 2004.

5.2.4 Developing categories of analysis

Three broad categories were identified for the analysis. In addition to allocating words into the two categories representing the two main areas on which this thesis has focused (research and evidence), a third category (enquiry) was also developed. This category was added because the words enquiry (or inquiry) appeared frequently in the target documents and were used in different ways within the texts.

Although enquiry and inquiry mean the same thing, different spellings were evident in documents issued by the education providers. Although it may be reasonable to assume that use of the word 'enquiry' might be concerned with questioning clinical practice (as in asking a clinical question) in relation to research and EBP subjects, interviews with opinion leaders in *Chapter 4* had revealed that this was not always the case. Enquiry was also used by nursing opinion leaders as a term to describe reflection on nursing practice. The meaning of enquiry, therefore, can have either an external focus in questioning practice, or an internal focus in examining one's own (nursing) response to the practice. Rather than assume the meaning of the words 'enquiry' and 'inquiry' applied by writers of target documents, I decided to retain these words within a separate category for the analysis. Thus, the three broad categories into which content words were allocated were 'research', 'evidence' and 'enquiry'.

5.2.5 Developing units of analysis

It is a requirement of enumerative content analysis that the units of analysis (or words in this study) are defined in advance.[176] Following a brief reading of the subject descriptions and outlines, 24 words or word-strings relating to research or EBP were identified. These are listed in Table 5.1. The words were pre-allocated to one of the three broader categories of research, evidence, and enquiry. Some words were easy to categorise as they can be regarded as belonging exclusively within a respective category. For example, research and research-based, evidence and evidence-based, inquiry and enquiry. However, the allocation of other words to the three broad categories

of analysis was not so clear. In Table 5.1, the words in italics represent those which are categorized subject to my own interpretation. I understand that others may choose to categorise these words differently. However, this was the decision made when defining the units (words) and categories in advance, as required by the enumerative method. The results are presented both with and without the italicized words included in the analysis.

Table 5.1: Categories and units of measurement (words) for content analysis

Research	Evidence	Enquiry
research	evidence	inquiry
research-based	evidence-based	enquiry
research process	*asking questions* *decisions* *decision making*	
research appreciation *or* *understanding*	*accessing* *or* *search or searching*	
research method *or* *methodology (ies)*	*appraisal* *or* *critique* *critical appraisal*	
qualitative *or* *quantitative*	*application* *or* *utilization* *translation*	

As it is not possible (nor desirable) in this method to ascribe meaning or context to words in the documents, the process that I used for allocating the words or word-strings to categories followed the

following rationale. Any dominant use of the word 'research' was allocated to the 'research' category (for example, *research process, research appreciation* and *research method*); even though 'research appreciation' could quite possibly be taught as part of EBP, no such interpretation was made. Words which I interpreted as part of the process or actual steps of EBP were allocated to the 'evidence' category (for example, *asking questions, accessing, appraising* and *applying findings*). The words *qualitative* and *quantitative* are included in the 'research' category in Table 5.1, as I regard these as the methods of research. The decision to retain enquiry (sometimes written as inquiry) as a separate category has already been explained.

5.2.6 Enumerating content

Two independent coders were asked to count the number of times each word or word-string appeared in each of the three sets of documents outlined above. There were no more than ten pages of combined textual data from each university or college (including full subject outlines), and because much of the text was copied directly from the internet, the pages were well spaced and dispersed with graphics or images. Coders received a list of the content words presented in no particular order, and not yet allocated to their categories. Coders were instructed not to disconnect word-strings. For example, 'evidence-based' or 'research-application' is one count. The word-strings could appear in any order. For example, 'application of research' and 'research application' were coded as equivalent. Words appearing in the subject name or heading were not counted.

5.2.7 Reliability in content analysis

The reliability of content analysis is largely determined by the extent to which independent coders reach the same conclusion or arrive at the same measurement[187]after evaluating the content. Reliability can be improved by ensuring that the researcher maintains a distance from the analysis and refrains from coding the data themselves.[187]

In this study, two independent coders (not including myself) were given identical coding sheets with a list of words to identify within the three sets of documents. Agreement between the coders was measured as a percentage. Their final results (word counts) were returned to me for collation and allocation to each of the respective pre-determined categories, and to calculate frequencies. In recognition of the subjective nature of the initial choice and allocation of words to their respective categories, only the six words in normal font in Table 5.1 (research, research-based, evidence, evidence-based and inquiry and enquiry) are used to calculate and summarise frequencies in the final analysis. These words can be regarded as exclusive to their categories, unlike the words in italics which could be interpreted, and therefore allocated, in different ways. It can be noted, however, that in the allocation of words in Table 5.1, a bias towards a higher count in the category of 'evidence' might occur because it contains a greater number of possible units. This was not borne out in the results.

5.3 Results of the content analysis

The Bachelor of Nursing or Health Science degree prepares students for registration with the NSW Nursing and Midwives Board and for

entry to nursing practice in this state. In 2004, nine universities and one college offered an undergraduate nursing program at eighteen different campus locations across NSW.

5.3.1 Subject names and placement

A range of names were evident for subjects in research or EBP within nursing undergraduate programs in NSW. Table 5.2 lists the names of research subjects offered in the Bachelor programs, in addition to their placement within the three-year curriculum. Each university or college is identified by a letter in Table 5.2. The seven Schools of Nursing located within a multi-disciplinary faculty are denoted by an asterisk.

Table 5.2: Research subjects in NSW undergraduate nursing degrees in 2004

University/College * Schools of Nursing in multidisciplinary faculties	**Subject name**	**Year offered**
A*	Introduction to Nursing Research	2nd
B	Utilising research	1st
C*	Introduction to health research	3rd
D*	Health Care Practices	2nd
E*	Enquiry, Analysis and Change	2nd
F*	Foundation Studies 1B	1st
	Foundation Studies 2B	2nd
	Foundation Studies 3A	3rd
G	Inquiry and Research in Nursing	3rd
H	Inquiry in Nursing Practice	3rd
I*	Foundations for Enquiry and Nursing Research	2nd
	Applications of Enquiry and Research to Nursing	3rd
J*	Research Appreciation and Application	3rd

All education providers offered at least one subject in which content related to research or EBP is taught. However, subjects were

scheduled at various stages during the full-time equivalent of the three-year program. Although not necessarily reflected in the subject name, subjects offered in first or second year were more likely to have an introductory focus, whereas subjects focussing on using or applying research were more commonly offered in third-year. One education provider offered a single research subject in first-year, three providers offered research or EBP subjects in second-year, and four were third-year subjects. Another offered both a second- and third-year subject (University I), designed to build upon knowledge gained in foundation levels of enquiry in second-year, to the application of research in third-year. However, only one university had a curriculum structure which offered a subject in research or EBP across the whole three-year undergraduate program (University F). These 'foundation' subjects included content on the application of research in the context of the Australian health care system in first-year, progressing to EBP in second-year, and reviewing evidence for practice in third-year.

All education providers included instruction on the ethics of research as part of their subject or subjects. The names of the research subjects, or those teaching skills for EBP, are varied and reflective of different approaches. Enquiry (or inquiry) is in the title of half of the courses, the word 'research' appears in six and the word 'evidence' (or EBP) is absent from the subject names.

5.3.2 Document word counts

Subjects were specifically selected from the undergraduate nursing curriculum for an examination of content related to the teaching of research and EBP. Table 5.3 presents raw data from the content analysis. Three sets of data were used for the analysis as described in the methods:

1. The content of the homepage or welcome message of the Faculty or School of nursing (denoted as Home Page or HP in Table 5.3);
2. The brief description of the research subject or subjects offered in the undergraduate program (denoted as subject brief or B in Table 5.3);
3. The outline of the research subject given to the student (denoted as full subject outline or F). All but one of the universities and colleges (n=9) provided a full copy of their subject outline.

Table 5.3 shows the average frequencies of the 24 nominated content words, contrasted across the ten providers of undergraduate nursing education (University A – F). The word frequency is an average of the count of the two coders. The agreement between coders was 89% across all three documents, but was higher for the homepage and brief descriptions (95%), which contained less text. Where differences in coding counts occurred, the average has been reduced by a factor of 0.5 in the results for each whole difference. As described in the methods (above), words that can be regarded as unequivocally related to the categories of research, evidence, and enquiry are written in normal font in Tables 5.1 and 5.3. Other words associated with the study of research and EBP are written in italics in Tables 5.1 and 5.3 to

denote that their allocation to a particular category is based on my subjective interpretation.

In the previous version of the Australian competency standards on which these curricular would have been based (published in 2000), the domain of critical thinking and analysis defined a specific competency around research and made a link between research and improving standards of care in Unit 6: 'Values research in contributing to developments in nursing and improved standards of care'.[188] There were three elements within this unit:

1. acknowledge the importance of research in improving nursing outcomes
2. incorporate research findings into nursing practice
3. contribute to the process of nursing research

Given the wording used for research competencies in the 2000 standards, it is not unexpected that words relating to 'research' should appear more frequently in this document analysis, particularly use of the words 'research process'. It is also evident from the italicized content that words used within the three sets of documents (homepage [HP], brief subject outline [B], and full subject outline [F]) reflect a range of teaching and learning for research and EBP skills. If words in course documents are indeed considered reflective of educational practices, two universities (F and H) in Table 5.3 appear to offer a broader range of skills in preparation for EBP than the others.

Table 5.3: Average word counts in documents pertaining to research and EBP education in undergraduate nursing programs

Universities/College	**A***			**B**			**C***			**D***			**E***			**F***						
HP = homepage **B** = subject brief (year offered) **F** = full subject outline	**HP**	**B** 2nd	**F**	**HP**	**B** 1st	**F**	**HP**	**B** 3rd	**F**	**HP**	**B** 2nd	**F**	**HP**	**B** 2nd	**F**	**HP**	**B** 1st	**F**	**B** 2nd	**F**	**B** 3rd	**F**
Research	**4**	**1**	**3**		**2**	**13.5**		**2**	**18**		**1**	**9**	**1**	**2**	**11**	**3**	**1**	**22.5**		**8**		
Research-based																						
research process			*1*						*2.5*		*1*	*2*		*1*	*2*			*2*				
research appreciation						*1*																
research method						*1*			*1.5*		*1*							*.5*		*1*		
qualitative method					*1*	*4*			*4*			*1*		*1*	*1*			*1*	*1*			
quantitative method					*1*	*4*			*4*			*1*		*1*	*1*			*1*	*1*			
Evidence									**2**									**3**	**2**		**1**	**1**
Evidence-based			2			2			1						3			3	2			1
asking				*1*		*0.5*						*2*			*1*			*4.5*				
accessing																		*1*				
appraising					*1*	*3*			*4*			*0.5*			*4*			*4*		*1*		
applying								*1*	*4*									*3*				
Enquiry or inquiry			**1**															**1**				

Number represents mean word count of two independent raters. Asterisk denotes multidisciplinary faculty.

Table 5.3: Average word counts (continued)

Universities/College	**G**			**H**			**I**					**J***		
HP = homepage **SB** = subject brief (year offered) **F** = full subject outline	**HP**	**B** 3rd	**F** NA	**HP**	**B** 3rd	**F**	**HP**	**B** 2nd	**F**	**B** 3rd	**F**	**HP**	**B** 3rd	**F**
Research	**2**	**3**		**2**	**4**	**10**	**8.5**	**1**	**8**	**2**	**11**	**7.5**		**6.5**
Research-based														2.5
research process									*2*		*2*			
research appreciation												*1*	*1*	*3.5*
research method		*2*								*1*	*3*			*1*
qualitative method		*1*							*1*					
quantitative method		*1*							*1*					
Evidence						**2**								
Evidence-based				1		9								
Asking						*1*		*2*		*1*				
Accessing						*1*						*1*		*1*
Appraising						*3*								*2.5*
Applying		2				*2*		*1*	*2*			*1*	*1*	*3.5*
Enquiry or Inquiry		**2**				**1**			**6**		**3**			

NA = no data available

5.3.3 Summarised content of the education documents

Only the six objectively defined words presented in normal font (bolded) in the above tables (research, research-based, evidence, evidence-based and enquiry and inquiry) are used to calculate and summarise average frequencies for the final analysis. In Table 5.4, all ten educational providers are represented, but as two universities offered more than one research subject during their 2004 course (University F and I), a total of 13 brief subject outlines and 12 full subject outlines constitute the sample (one university, G, elected not to supply their full subject outline). Two universities published a Mission Statement in addition to the introductory and welcoming text of their homepage (HP) and these are included in the analysis.

Table 5.4: Average and total count of word references

	University or College Homepage (HP)		**Brief subject description (B)**		**Full subject outline (F)**	
	Mean word count per document (n=10)	total count	*Mean word count per document (n=13)*	total count	*Mean word count per document (n=12)*	total count
Research *or* research-based	4.0 (2.9)	7	1.9 (1.0)	10	10.2(5.7)	12
Evidence *or* evidence-based	1.0 (0)	1	1.7 (0.6)	3	2.9 (2.9)	10
Enquiry *or* inquiry	0.0 (0)	0	2.0 (0)	1	2.4 (2.1)	5

1. School or faculty homepage

As Table 5.4 illustrates, the word 'research' is used an average of four times in these general introductory documents. EBP is mentioned on the homepage (HP) of only one nursing education provider.

2. Brief subject outlines

Mean word frequencies within subject briefs (B) indicate that there are an approximately equal number of word references to research, EBP and enquiry within the student handbook descriptions of the research subjects.

3. Full subject outlines

In Table 5.4 it is evident that words referring to 'research' are used more often than references to 'evidence' or 'EBP' in the full subject outlines (F). Although the word 'evidence' or 'EBP' appears in ten of the 12 subject outlines, the average number of times the word is used in all 12 documents is only 2.9 per document. This can be contrasted with an average of 10.2 per document for references to the words 'research' or 'research-based'. Therefore, while the words used in subject outlines reveal that specific skills for EBP appear to be taught (as shown by the frequency of italicized words appearing in the text in Table 5.3), the objective of learning these skills is not reflected in the language of evidence or EBP, but rather, using the language of 'research'.

The language used within the subject outlines was often confusing. For example, one learning outcome was to **'**utilise evidence-based research to provide meaning and justification to health practices, policies and procedures'. The notion that research is applied to add meaning or

justification (rather than to inform practice) also arose in responses to the open-ended survey question (Question 8) reported in *Chapter 3*.

Although research texts were excluded from word counts within the documents, it was also noted that there was little consistency across providers concerning which texts are recommended for the study of research and EBP in nursing. In two universities, the recommended research text was one which had been written by an academic from that institution. Both of these authors are included in the sample of opinion leaders (*Chapter 4*). Appraisal or critique of a research paper constituted all or part of the assessment in five of the eleven subject outlines where a final assessment was specified. Writing a research proposal or preparing a proposal for review by an ethics committee was the final assessment item for three of the subjects.

5.4 Limitations of the study

This enumerative analysis provides an objective account of the content of written text according to three pre-determined categories representing research, evidence and enquiry. The pre-determination of categories, and the identification of words (units) to allocate within those categories, is both a strength and limitation of this analysis.

While coders were given an objective set of rules to follow (counting the occurrence of pre-determined words as they appear in texts) and were in good agreement with each other, the original allocation of the 24 content words to the categories required a subjective judgment on my part. However, this decision was based on knowledge gained from the survey and interviews previously conducted for this thesis, and the way nurses

had used language for EBP within each. Enumerative content analysis does not permit meaning or context to assist in allocation decisions and the tendency to break data into decontexualised units is a common criticism of this approach.[176] Because of this limitation, only the six objective words (research and research-based, evidence and evidence-based, enquiry and inquiry) are used in the final summary of results. However, the results are the same whether the italicized words are included in the content analysis or not.

The decision to place all words subjectively representing the steps of EBP within the category of 'evidence or EBP' saw the word-strings 'asking questions' and 'decision-making' coded within this category. It could be argued that 'asking questions' is more appropriately categorised under the category label of 'enquiry'. However, even if the categories of 'evidence' and 'enquiry' are combined, the results do not change. Similarly, 'critique' or 'appraisal' could be allocated to either category, depending upon the context in which such practices are taught. However, whatever decision is made in an enumerative content analysis, it is made explicit at the beginning of the analysis and is maintained throughout.

This analysis was conducted with documents describing the content of research and EBP subjects offered in undergraduate nursing programs in NSW in 2004. It is inevitable that the content of programs, subjects and subject placement will change over time. Indeed, many of the education opinion leaders interviewed (in *Chapter 4*) expressed a desire to review the placement and content of their research subjects in the near future. A further limitation of this content analysis can also be related to

comments made by opinion leaders. That is the view that words used in curriculum documents do not necessarily reflect what is actually being taught in the classroom – otherwise described as the 'hidden curriculum'.

5.5 Chapter summary

A range of names was evident for research or EBP subjects within nursing undergraduate programs in NSW. While all providers offered at least one subject in research or EBP, these were scheduled at various stages throughout the full-time equivalent of the three-year program and their content was varied. Only one university had a curriculum structure which offered a research or EBP subject as part of a foundation course across the three years of the undergraduate program. In 2006, this integrated EBP program was dropped back to a single research subject on the advice of a newly appointed Dean. All providers included instruction on the ethics of research as part of their subject or subjects, and critical appraisal was the most commonly used form of subject assessment.

The results of this content analysis suggest that many providers of undergraduate nursing programs in NSW are teaching about the method and process of research, but the actual range of skills required by nurses to become evidence-based practitioners of the future are not reflected in the words and language of documents relating to current curricula. While it is expected that the word 'research' would appear often in an analysis of documents pertaining to research and EBP subjects , the fact that it appears more often than references to 'evidence' or 'EBP' is likely

to be a reflection of curricula based on (now) outdated national competency standards. Prior to the release of new standards in 2006, the previous version (issued in 2000)[188] focused competency statements on valuing research, incorporating research into practice and contributing to the research process. These words are reflected in the subject outlines examined for this analysis.

The revised competencies now focus specifically on EBP, yet only two of the universities included in this analysis currently appear to offer the range of skills required to prepare students to become evidence-based practitioners. These results suggest that in order to meet new competency standards for EBP, NSW universities will need to look at the research and EBP subjects within their current undergraduate curriculum to determine whether these are able to deliver the skills required for the beginning registered nurse and midwife to practice using an evidence-based framework.

In the next chapter the results of this and the preceding two studies are combined to present a summary of the main findings of this thesis. The findings are then applied to the development of recommendations for teaching EBP to nurses in Australia.

Chapter 6

Implications and applications

6.1 Chapter overview

The results of this thesis have demonstrated that in at least one state of Australia (NSW), approaches to teaching EBP may be inadequate for preparing nurses to successfully use evidence in practice and inconsistent with demands upon nurses to meet new Australian competency standards for evidence-based care.

Throughout this thesis it has been argued that it is both appropriate and necessary to introduce education for EBP to the nurse at the undergraduate level. While it is recognised that research and EBP are not a high priority in current undergraduate nursing curricula, it is argued that an agreed foundation level of skill and a common approach to the promotion of EBP must be adopted before it can be possible for nursing graduates to effectively translate evidence for nursing practice. Foundation learning for EBP begins with a clear articulation of what evidence for nursing is within a particular context and an understanding of when and how research and other evidence can be used to improve patient care. The style and content of EBP subjects should parallel the level of undergraduate orientation to clinical practice and include strategies to assist students to seek out EBP champions and networks in the clinical setting within which they will work

In this final chapter, findings from the three separate studies which form the major content of this thesis are summarised and combined. The

results are then considered in conjunction with contemporary educational models for EBP to propose recommendations for teaching EBP within the context of nursing in Australia. A conceptual framework is developed for implementing these recommendations across a continuing professional development pathway for nurses. This framework extends EBP education beyond the undergraduate curriculum to encompass post-registration learning, the clinical context, and the role of EBP leaders, educators and faculties in the adoption of EBP. Aspects of the framework are illustrated in a post-registration distance education module which I was asked to write as part of a Graduate Certificate in Advancing Nursing Practice in 2005, prior to completing this thesis.

6.2 Summary of findings

This thesis commenced by placing EBP within a personal and professional context. An account of how my own views towards EBP developed and changed as a result of my experience of teaching EBP was followed by a review of the Australian and international literature on EBP in nursing and nurse education. This introduction was intended to place the three studies on EBP undertaken for this thesis within the context of Australian nursing and healthcare. The findings from each of the three studies are summarised below. Each adopted a different perspective in exploring NSW nurses' understanding of evidence for EBP.

6.2.1 Results of the survey of NSW nurses

A survey entitled *Nurses' Perceptions of Evidence-based Practice* was undertaken to investigate the knowledge, attitudes and skills for EBP among 383 pre- and post-registration nurses in NSW. The results of the survey illustrated that in regard to EBP, the issues for nurses in NSW are similar to those experienced by nurses and other health professionals across the world. NSW nurses responding to the survey had a welcoming and supportive attitude towards EBP but lacked competence and confidence in many EBP skills. It is encouraging that pre-registration nurses in the survey demonstrated greater confidence in their ability to search for evidence, but this alone is not sufficient to secure their future ability to effectively translate evidence for practice. Without being adequately prepared to undertake the first three stages of EBP (formulating a question, searching for the best available evidence and critically appraising that evidence), it is suggested that the final stage (translating evidence for individual patient decisions) is a difficult, if not impossible, task. Therefore, other ways of approaching education for EBP need to be explored.

NSW nurses held a range of definitions for the word 'evidence' in EBP. The two most common definitions given by survey respondents were firstly, that evidence arises from a controlled or rigorous process and secondly, that evidence is that which has been proven in practice to produce a positive outcome for the patient. It was not possible to define the meaning of the words 'rigour or control' as used by survey respondents, or how this evidence should be 'proven'. Respondents were not asked to elaborate on meaning in their written definitions of

evidence given on the survey. However, it was clear that improving outcomes for the patient by using some kind of structured approach to grading evidence is a desired objective of EBP and is clearly a priority for a practice discipline such as nursing.

The NSW nurses responding to the survey most commonly chose 70% as an estimate of the percentage of nursing practice that is based on evidence. This high estimate seems to contradict a prevailing myth that nursing does not have a large evidence base. Clearly it depends on how individual nurses define and measure what they understand evidence to be. The survey also demonstrated that in common with colleagues worldwide, nurses in NSW have a broader view of evidence than that which has been traditionally defined within EBM. Finally, variation in survey responses demonstrated that it cannot be assumed that all nurses know and understand the concepts of EBP to the same degree, or that their internalized concepts of evidence are homogenous.

6.2.2 Results of opinion leader interviews

Semi-structured interviews were used to explore the views of 23 nursing opinion leaders towards evidence for EBP. Knowing what was qualitatively different about the ways in which EBP is understood, conceptualised, or made sense of by NSW nursing opinion leaders exposed a number of ways in which opinion leaders' own orientation towards EBP could be seen to have an influence on the views of other nurses – particularly in their use of language around EBP. Identification of these qualitative differences also suggested a range of possibilities for the future development of the EBP leaders' role.

The results of the interviews were presented within the structural and referential framework of phenomenography. In the structural hierarchy, ways of understanding EBP ranged from a focus on the evidence itself – where evidence is understood only in relation to research – through to a broad and global perspective in which EBP was viewed as a means to improve effectiveness and efficiency in healthcare. In the referential (or meaning) frame, evidence was seen against the background of the opinion leaders' own experience. This background is coloured by past and present nursing knowledge, and by previous experiences in research and practice within the wider healthcare environment. The tension between nursing as a practice-based caring profession and as a scientific academic discipline was evident in all the interviews. These various influences combine within the structural and referential framework to produce a range of different ways in which nursing opinion leaders understand evidence for EBP. These findings suggest that, currently, it may not be possible to define a shared or common view of evidence for EBP among nursing opinion leaders in NSW.

None of the opinion leaders interviewed saw EBP as a bad thing. All supported the concept that EBP is a way of delivering the best possible care to patients and of promoting health within the community. However, what the best available evidence for nursing practice actually consists of was not always clear. The meaning of evidence within specific contexts was certainly not consistent either within or between participants. This lack of a common definition of evidence has implications for the success of EBP in nursing. As in other professions, opinion leaders model behaviours and focus their teaching on what they

know and understand about a phenomenon. Failure to articulate a clear and common vision for what evidence and EBP mean for the profession presents a confusing background for nursing students and clinicians who seek to use evidence in their practice.

6.2.3 Results of content analysis of education documents

In the final study, an Internet search of providers of undergraduate nursing education in NSW made it possible to identify specific subjects within undergraduate nursing curricula that were aimed at either EBP or research education. A content analysis of selected words relating to evidence, EBP and research was undertaken in a total of 35 documents issued by nursing education providers to determine how concepts, language or the philosophy of EBP is articulated to students at this general entry level.

The results of the content analysis suggest that many providers of undergraduate nursing programs in NSW are teaching isolated EBP skills (sometimes described as micro-skills), or the process of research. However, the full range of skills required by nurses to actually use evidence in practice was reflected in only a small number of the documents. There are pockets of agreement within the documents about some of the micro-skills that are taught for EBP (for example, critical appraisal). Apart from this, there is little indication that current fragmented programs will enable new graduates to meet revised national standards for competent nursing and midwifery practice in Australia with regard to EBP. Further, schools and faculties do not

appear to promote EBP as a fundamental educational objective within their programs.

While it is acknowledged that individual educators and organisations will bring their own novel approaches to engaging and preparing students for practice, documents relating to undergraduate nursing preparation for EBP reveal minimal evidence of engagement between the academic and clinical sectors. The document review revealed no evidence of educational providers seeking opportunities for investigating real practice problems in the clinical environment using an evidence-based approach.

6.2.4 Thesis summary

Variation in ways of understanding and describing evidence for EBP in nursing education and practice in NSW is a consistent finding in this thesis. The summarised findings of all three studies are:

- Similar to nurses world-wide, nurses in NSW, Australia, support the concept of EBP to improve patient care.
- The level of knowledge and skill for using evidence in practice is variable among NSW nurses responding to the EBP survey.
- There is variation in the way evidence from research and evidence from other sources is understood by nurses in NSW.
- Among NSW nurses responding to the survey, the two most frequently cited definitions of evidence (as it relates to EBP) are that:
    - Evidence arises from a controlled or rigorous research process.
    - Evidence is that which has been proven in practice to improve patient outcomes.

- Among individuals, variation in the way research and other evidence is understood appears to be shaped by a combination of factors, including previous educational experiences, professional experience in clinical or other areas of specialty practice and the conditions under which they have been previously exposed to conducting or using research in professional practice.
- For opinion leaders and role models in nursing, ways of understanding evidence can be summarised into four main approaches:
    1. Understanding evidence in the same way as (quantitative) research is understood.
    2. Understanding that evidence includes research, but acknowledging that it can also include input from other sources. A requirement is that the quality of this input has been validated in some way.
    3. Placing very few limitations on the nature of the evidence (where it comes from) but recognising that the kind of evidence used will depend on the context of the clinical decision being made.
    4. Understanding evidence within the broadest context of healthcare, where EBP is employed as a means of improving patient outcomes through the efficient and effective delivery of healthcare.
- Approaches to teaching EBP in nursing undergraduate programs in NSW are varied. Curricula approaches range from offering single subjects either in first or third year, to vertical integration of EBP skill development across the three-year program.
- Written information prepared for prospective or current nursing students rarely defines EBP and a range of concepts, language and philosophies for the promotion of EBP are being used.

It is clear that NSW nurses understand evidence in different ways. This implies that their understanding of how to implement EBP in nursing will also be different. While it is not suggested that individual ways of seeing the world should be discouraged, a consequence of holding a unique perspective on the meaning of 'evidence' is that inconsistent

definitions and variations in the use of language for EBP have developed. It is my belief that this variation has contributed to a piecemeal approach to preparing nurses to use research and other evidence in their practice.

The results of all three studies conducted for this thesis suggest that while current teaching models for EBP continue, new graduates will continue to struggle with the practical and theoretical concepts involved in delivering evidence-based nursing care. Further, these three studies suggest that nurses themselves may be contributing to this confusion through the inconsistent use of language for research and EBP in their teaching and other forms of communication, such as educational documents. Many NSW nurses do not yet seem adequately prepared to deliver evidence-based care. While some of this may be due to variations in the age and educational background of the current nursing workforce, I believe that some if it also lies in the failure of educational programs to specify common aims for preparation in EBP. It is my view that the blanket approach currently taken towards preparing undergraduate nurses for EBP fails to teach students the skills they need for deciding on the best available evidence for the type of question being asked, and for applying this evidence within the context of their work.

Further, the questions that occur in practice are not always clinical and not always about nursing. Healthcare occurs in many different contexts and it is important for all health professionals to acknowledge that sometimes the evidence, or the resources for EBP, may be more appropriately sourced from other places (such as asking the patient) or from other disciplines (non-nursing). Nursing is not alone in facing the

challenges of EBP. It is possible that a similar heterogeneous view of the meaning of evidence may also be a feature within other healthcare professions. If the boundaries of 'evidence' are ill-defined both within and between the health care professions, the potential for difficulties in implementing evidence into the multidisciplinary setting assumes an even greater emphasis.

A consistent approach to EBP education is required before further demands upon nurses (and other healthcare workers) to become evidence-based practitioners can be made. This foundation must be laid during undergraduate preparation, with a clear articulation of what evidence is required within a particular context, but also, when and how this evidence can be used to improve patient care. The style and content of EBP subjects should parallel other preparation for clinical practice. The results of this thesis suggest that as EBP is not yet part of the fabric or culture of clinical nursing in Australia, it is likely to be more efficient for undergraduate students to learn how to access EBP champions and research leaders in the clinical setting, rather than learn how to do research themselves. Research skills can be explored in greater depth at Masters and PhD level. Equally, this foundational preparation for EBP at undergraduate level must be reinforced in the clinical context by role models and leaders, and through continuing education programs.

6.2.5 The way forward

In a relatively new online nursing journal, *Worldviews on Evidence-Based Nursing*, Fineout-Overholt and Johnston[189] outline their intentions for a regular column in the journal dedicated to education and teaching in

EBP. They suggest that a paradigm shift from traditional models of nursing education to the integration of EBP in nursing curricula is currently in progress. The results of the studies undertaken for this thesis confirm that determining a level of agreement about how, what and when nurses should receive instruction on EBP is integral to making progress in this supposed paradigm shift. Educators and other faculty staff are fundamental to this process. Educators need to be mindful that differences in adult learning styles apply equally to the teaching and learning of EBP among pre- and post-graduate nurses. Faculty staff should also be more aware that the views and attitudes they hold may be influencing their students' views towards EBP.

Despite a number of attempts to study methods for teaching EBP, it has not been possible to determine the appropriate 'dose' or 'formulation' required to achieve the desired outcome of using EBP in clinical practice.[190] Further, much of the discussion about education for EBP has occurred in the postgraduate environment.[191] But EBP does not automatically 'switch-on' at the first clinical encounter. So, what might a framework for education for EBP in nursing look like? In the following sections, the findings from this thesis are considered in conjunction with ideas from contemporary models of EBP education to propose recommendations for teaching EBP to nurses in Australia. The recommendations are applied to the development of a conceptual framework for EBP education in this country. First, some basic principles underpinning the development of these recommendations are outlined.

6.3 Principles for EBP education in nursing

The following basic principles are applied to establishing recommendations for teaching EBP in nursing and to the development of a conceptual framework for EBP education. These represent the evolution of my own understanding and experience of teaching EBP to nurses and are based on the collective findings of EBP literature and the results of this thesis.

6.3.1 Identifying the learner

Making a distinction between those who need to learn specific skills (micro-skills) for EBP and those who need to know how to apply pre-appraised evidence summaries into practice is an important first step. The reality of nursing practice is that most nurses will develop skills in response to clinical encounters using a combination of what they have been taught and what they have learned through previous clinical experience. Many (but not all) nurses will become life-long learners within their chosen specialty area. Unless they choose research as a specialty, opportunities for being involved in research or actively participating in all five steps of EBP (asking questions, accessing evidence, appraising, applying and assessing outcomes) will be rare. Currently in Australia, only a small proportion of post-registration nurses undertake research degrees or become researchers. Therefore, a basic principle underpinning recommendations for the future educational preparation of nurses for EBP is that the average nurse involved in direct clinical care requires a practical and useful foundation

on which to develop skills for implementing evidence into practice rather than learning how to become a researcher or to 'do' research.

6.3.2 The basics of undergraduate education for EBP

The results of this thesis have collectively demonstrated that undergraduate nursing students need to know what kind of evidence is most appropriate to the kind of question being asked. Principles for undergraduate education in EBP therefore need to include instruction on how to formulate clinical questions that are able to be answered, and how to access and judge the quality of existing EBP support materials such as guidelines and evidence summaries to answer these queries. In keeping with maintaining a realistic perspective on the environment in which new graduates will commence practice, an underlying principle of undergraduate education for EBP is that students need to learn strategies for accessing EBP resources and networks within the clinical environment. The support of evidence champions in the workplace is necessary to help them translate and use research and other evidence in clinical decision making, and to successfully implement evidence-based practice change.

6.3.3 The basics of post-registration education for EBP

A foundation principle for post-registration nursing education in EBP is that post-registration nurses will be most interested in evidence which has been shown to improve outcomes for their patients or clients. Another principle of EBP education for this group recognises these nurses as adult learners who bring varying degrees of experience from their previous education and clinical work to the learning environment.

For the majority, opportunities for EBP education will occur in the context of undertaking clinically oriented continuing education or professional development courses. It is important that the relationship between evidence and practice is made explicit and relevant to the background of experience shared by these adult learners.

6.3.4 The language of evidence and EBP

The language of EBP is not just difficult for nursing. Mowinski-Jennings and Loan[124] state that the frequent interchange between the terms EBM and EBP has blurred the distinction between scientific and biomedical interventions, and the larger view of healthcare. Nursing has been criticized for incorrectly using EBP as a synonym for research utilization and research-based practice when the more accurate view (according to these authors[124]) is that research use and research-based practice should be viewed as subsets within the broader rubric of EBP.

The studies undertaken for this thesis reiterate this conclusion. Results of the opinion leader interviews (in *Chapter 4*), demonstrate that nurses and nursing opinion leaders often use the terms 'research' and 'evidence' interchangeably because they see evidence coming from a variety of sources, including research. This implies that some may also see research-based practice and evidence-based practice as the same thing. My understanding is that these are clearly different. EBP is part of a much larger and more inclusive decision-making process for healthcare. Research provides the evidence for clinical decisions and this research can be graded according to its quality and applicability to the clinical question (the notion of using 'best available' evidence). Good quality

evidence from research is not always available for nursing questions, which is why some nurses may look to other sources to provide 'evidence' for the kind of decisions they need to make. As a starting point, my first recommendation is to suggest that nurses adopt the phrase 'research and *other* evidence' to differentiate evidence derived from research, and evidence obtained from other sources. It is not possible to change the way individuals ascribe meaning to evidence in the context of nursing, but it is important that they use a consistent and explicit language when discussing research, evidence or EBP with nurses and other disciplines.

The content analysis in *Chapter 5* illustrates another example of how confusing the language around EBP can be. With regard to asking clinical questions in practice, many of the undergraduate subjects in research and EBP had the words 'inquiry' or 'enquiry' in their title. In some, the word 'enquiry' was used to denote questioning *in* clinical practice (in caring for a patient). For others, it was used in the sense of the nurse reflecting *on* their own practice. While undergraduate subjects may indeed include instruction on formulating answerable clinical questions for EBP, it is possible that unless this made explicit, students may not necessarily make the connection that 'enquiry' is a part of EBP, and is an important first step. This was certainly not obvious from the language of the course outlines.

6.4 Models for teaching EBP

A number of models have been proposed for evaluating the effectiveness of teaching EBP in the healthcare disciplines. However, there is still little

evidence for which of these is likely to be the most effective. Despite this, the models provide a useful reference for developing recommendations and a conceptual framework for teaching EBP in nursing. Three of these models are reviewed below.

6.4.1 Evaluation model for teaching evidence-based medicine

The Society of General Internal Medicine Evidence-based Medicine Taskforce[107] has proposed a framework for teaching EBM using an evaluation model. The framework has already been criticised for lacking integrity for the quantitative evaluation of outcomes of effectiveness in teaching[192] (for example, lack of ability to standardise teachers and participants). The model does, however, offer a useful structure and identifies educational outcomes for consideration in conjunction with the findings of this thesis.

The first dimension of this framework identifies the needs and learning styles of the learner. The second dimension brings in the five-step approach to EBP: asking questions, accessing evidence, appraising, applying and assessing outcomes.[121] The dimensions are related to three modes for incorporating evidence into practice (doing, using and replicating)[113] within the evaluation framework. These three modes are described below in some detail as they are what make the framework flexible and therefore adaptable to the needs of nursing learners. Rather than aiming to evaluate the blanket learning of skills, the framework can be adjusted to whether any or all of the EBP steps are used in a particular context.

Identifying educational outcomes for EBP

The Taskforce (above)[107] nominates five areas in which one might expect to see a change in educational outcomes following the effective teaching of EBP. These include improved attitudes, knowledge, skills and behaviours among students, and improved clinical performance. These five educational outcomes are applied to a conceptual framework for teaching EBP in nursing in Section 6.5.

To ensure that EBP education meets the needs of the learner, it is important to determine how EBP will be used by that learner. The following section describes how a nurse might use the three modes (doing, using and replicating)[113] for incorporating evidence into nursing practice. Determining how EBP will be used by a nurse makes the relationship between educational inputs (what nurses need to know) and the educational outcomes outlined above more explicit.

The 'doing' mode of evidence implementation

This mode relates to active participation in gathering and appraising appropriate evidence in response to a clinical or other question. 'Doing' means applying at least the first four steps of EBP to the clinical problem (asking, accessing, appraising and applying evidence). The type of situation in which this mode of EBP implementation might be applied in nursing is for common, non-urgent decisions for which time and other resources are available, for example, in developing an asthma plan for a stable hospitalised patient prior to discharge.

In relation to educational inputs, preparation for this mode would require teaching nurses to convert clinical problems into answerable

questions; teaching advanced searching skills to enable nurses to track down the best available evidence to answer the clinical question; helping nurses learn critical appraisal skills so that the validity and relevance of the evidence could be judged; and finally, ensuring nursing students had knowledge of quality improvement, organisational and change management theories in order to successfully integrate the evidence into their particular healthcare context.

In order to operate within this mode, a nurse requires a relatively high level of skill and confidence in EBP, and both the time and ability to access point-of-care resources (such as the Clinical Information Access Program (CIAP) in NSW). It is then assumed that the nurse has sufficient potential and scope within their role to lead a change in organisational and clinical behaviour, and to maintain the evidence-based practice. The reality of clinical nursing practice (in NSW at least) is that this step-by-step approach would rarely be an option for nurses involved in direct clinical care due to constraints on their time and their access to resources. The leads one to question the clinical and practical wisdom of teaching the 'doing' mode of implementing evidence to undergraduates when the opportunity to use this mode is more likely to reside within the scope of those employed in more senior roles (such as nurse managers, nurse practitioners, clinical nurse consultants, researchers, educators and opinion leaders).

The 'using' mode of evidence implementation

The 'using' mode is applied when clinicians restrict their evidence gathering to pre-appraised sources such as evidence-based clinical

guidelines, protocols or evidence summaries.[113] The EBP steps that are 'skipped' in this mode are critical appraisal and evaluation, which are undertaken by some other person or organisation. The results of the EBP survey reported in *Chapter 3* showed strong support among pre- and post-registration nurses in NSW for using evidence-based guidelines and protocols. Some opinion leaders also supported this view, suggesting that teaching undergraduates where to find resources for EBP (either through people, places or publications) is likely to be more useful to them in the practice setting.

Evidence summaries for nursing questions are currently available from a range of providers both internationally and in Australia. The Cochrane Library (www.cochrane.org.au) is freely accessible to the general public and healthcare staff in Australia. Evidence summaries from the Joanna Briggs Institute (www.joannabriggs.edu.au) and the Evidence Based Nursing journal (http://ebn.bmjjournals.com), for example, are available by subscription. Clinical practice guidelines and other resources for evidence translation are also available from a number of sources within Australia including the National Institute of Clinical Studies www.nicsl.com.au and the National Health and Medical Research Council www.nhmrc.gov.au), and the list is continually growing. Using evidence summaries brings a degree of efficiency to EBP in a time-poor environment, but the 'using' mode of evidence implementation can only apply to questions for which critical appraisal or systematic reviews of evidence have already been undertaken.

A relatively high level of skill and confidence in EBP is also required to successfully implement evidence in this mode. Clinicians must

understand how to convert clinical problems into answerable questions and have good searching skills. Knowledge of EBP resources is also assumed. In the practice setting, evidence 'users' are still required to make decisions about the relevance of the evidence summary to the question being asked, and to engineer clinical behaviour change in implementing the evidence. While there is less demand on critical appraisal skills when using systematic reviews and evidence summaries, knowledge of what one would expect to see in regard to the process used to arrive at the summary would be useful in judging the quality of the review.

The 'using' mode makes evidence potentially more accessible to nurses at all levels of practice. It is less demanding on clinical time and is therefore likely to be more sympathetic to the practical realities of the context of nursing practice. However, as was noted in *Chapter 3*, NSW nurses were not always aware of the range of EBP resources available to them, particularly on the international scene. Skills in searching electronic databases were also variable, especially among post-registration nurses who have minimal experience or opportunity to use computers for searching literature in the clinical setting. The results of the EBP survey in *Chapter 3* showed that nurses' literature searching skills were developed more from their previous study experience, than from seeking the answers to clinical questions.

The 'replicating' mode of evidence implementation

Using colleagues as a primary source of practice knowledge[10,16] accurately describes the 'replicating' mode of evidence implementation.

In 'replicating', individual nurses identify, attend to and follow the instruction and advice of leaders within the profession. Potential leaders in EBP can include any or all of educators, knowledge brokers, opinion leaders and clinicians from any discipline with whom nurses have had contact during undergraduate education, clinical placement, nursing specialisation, continuing education or post-registration tertiary study. In this mode of evidence implementation, many of the actual steps to practicing EBP are avoided as the nurse is adopting a view and/or behaviour derived from another person or group.

The replicating mode clearly relies on clinical leaders also being EBP champions. As suggested in *Chapter 2*, EBP is still in its infancy in Australian nursing, and finding leaders with EBP knowledge and skills to replicate may not be that easy. Further, this thesis has also shown that the knowledge, skills and attitudes of opinion leaders in NSW towards evidence for practice may be reflected in a broad range of views and behaviours, some of which may not be particularly easy for the student to interpret in the practice setting, for example, the search for knowledge as 'truth' (*Chapter 4*).

The question that arises for me about the replicating mode is whether replication occurs more frequently in nursing practice because of a lack of preparation for the other modes of evidence implementation, or whether replication occurs because the context of clinical nursing work simply makes asking someone else for evidence an easier option when there is limited time and access to point-of-care resources for EBP. The results outlined in this thesis suggest that it is most likely to be a combination of both factors. However, instead of assuming a clinician

using this mode requires no special educational input for EBP, their ability to state the clinical problem as an answerable question remains critical to the success of the EBP leader or champion being able to take the appropriate lead on their behalf. In addition to interpreting evidence for the practice context, EBP champions also have another role in translating and implementing evidence within the economic and management goals of the organisation.

It is my view that at the present time, the majority of clinical nurses in NSW negotiate the answers to clinical questions using the 'replicating' mode, but are slowly developing the skills necessary to implement evidence in the 'using' mode. Summaries of evidence are increasingly available to nurses, and appear both acceptable and practical in terms of providing a ready source of evidence-based information. However, access to these is still somewhat reliant upon employing organisations to supply printed materials, EBP tools (such as computers) and EBP champions to translate evidence for the practice context and to lead practice change.

Evaluating the effectiveness of evidence-based practice change

The final step in EBP is evaluating the effectiveness of implementing evidence derived from the previous four steps into practice. Often this will involve performing an evaluation or outcome study to determine whether implementing the new evidence has made a positive difference to patients/clients, the clinical service or to the organisation. In regard to educational inputs for EBP, evaluation in nursing is frequently concerned with measuring outcomes from quality and safety initiatives,

and conducting audits. Audit has traditionally fallen within the domain of nursing work – initially through clinical quality co-ordination and more recently through clinical governance and risk management activities. However, nurses' contribution to clinical outcomes research continues to grow as research knowledge develops within the profession and collaborative interdisciplinary research partnerships are increasingly formed.

6.4.2 Benchmark model for EBP in curriculum development

While it is recognized that curriculum change is a slow process, the development of a new undergraduate program, or the scheduled rewriting of an outdated curriculum, provides an excellent opportunity to incorporate new and innovative practices. This was the case for one Australian university which used the development of a new undergraduate nursing curriculum as an opportunity to put forward a template for embedding EBP into their program and their nursing department.[6] The focus of this work is similar to that of the Taskforce above. The Taskforce model[107]proposes a conceptual framework for evaluating the teaching of EBM, while Chaboyer et al.[6] use benchmarking as the framework to answer fundamental questions about what has been learned (in regard to EBP) under their new curriculum model, and how this can be improved in the future (also evaluation).

The curriculum benchmarking project[6] identifies two major categories for the successful integration of EBP into nursing education: infrastructure and processes. Within infrastructure, the importance of a common space for EBP activities (or an EBP unit) is stressed as a place

from which EBP champions emerge. Within processes, the three sub-categories identified were the early introduction of EBP, the integration of EBP throughout the curriculum and mutual planning with local services. It is this last category which I believe makes the real link between evidence and practice, and which gives EBP a practical and credible profile beyond the academic environment. Mutual planning between healthcare facilities, staff and education providers facilitates the agreement of a common platform for evidence-based care towards which all parties can work to achieve better outcomes for real patients within the context of their practice.

The aims, content and methods proposed for teaching EBP in the benchmarking project appear similar to those in many of the subject outlines reviewed in *Chapter 5*, except that the program is integrated across the three-year curriculum. In following the thread of discussion woven throughout this thesis, I found it disappointing that after two years of EBP skills development, one of the major content items recommended by this model is to 'conduct a research project' in third-year.[6] As far as I am aware, the relationship between teaching research methods or the research process to undergraduate nurses (in the context of writing a research proposal or conducting a small research project) and their subsequent ability to implement research findings into practice has neither been established nor been proven beneficial. In fact, the experience of some opinion leaders interviewed for this thesis (*Chapter 4*) suggests that it can have completely the opposite effect. Attempting to conduct a research project that has little hope of gaining ethics approval or lacks the investment of time, money and expertise to successfully

complete can be a frustrating and unfulfilling experience which may actually turn students off research. In my opinion, this research-based approach is not helpful to improving nurses' readiness for EBP.

Despite this, the benchmark model[6] makes many other useful and relevant suggestions for the development of a conceptual framework for teaching EBP in nursing. For example:

- An EBP unit situated within a school or faculty provides a tangible 'space' in which staff and students collectively focus on EBP and serves as a symbol of organizational commitment to EBP education. EBP champions are identified through their connection with this space.
- EBP coordinators are appointed for each year of the undergraduate program to oversee and ensure commitment to EBP principles at the appropriate level. They deliver workshops and organize other activities around EBP promotion.
- Regular reviews of faculty staff incorporate the opportunity for the staff member to reflect on their own use of evidence in teaching.
- Vertical integration of EBP across the whole of the curriculum, rather than offering 'one-off' subjects or teaching one or two isolated EBP micro skills.
- Introducing EBP early in the curriculum by firstly developing awareness then progressing towards orientation and finally an understanding of the concepts and skills.
- Using a knowledge broker or other resource such as a partner organization through which knowledge transfer can occur between a university and the clinical setting, a university and the community, or the clinical setting and the community.

6.4.3 Research utilisation and EBP education model

Another strategy for teaching EBP is proposed by Killeen and Barnfarther[83] from the University of Michigan (US). This model also arose from a curriculum redesign, in this case, recognition of duplicate

content between a knowledge synthesis and a management course. The model was also prompted by a decision from the United States Institute of Medicine to make 'employ evidence-based practice' one of five core competencies required of all US clinicians in a bid to improve the quality of health care in the US in the 21st century.

The focus of this work is similar to the above models[6,107] but there are conceptual differences in where and how the learning occurs. Outcomes are related to the success of an evidence-based practice change (or innovation) in the clinical setting, with an emphasis on maintaining clinical networks and service-education partnerships. Baccalaureate students undertake a 'real-life' clinical project under the guidance of a clinical manager and clinical educator. The EBP projects are driven by clinical facilitators in response to real clinical questions. Because of the nature of many clinical problems, students are not required to complete the project within the one semester allocated to their subject. Clinical facilitators can use as many different students (and semesters) as it takes to bring about successful completion and evaluation, with most projects lasting over three semesters. This can be contrasted with the benchmark model of Chaboyer et al.[6] in which the third-year student undertakes a research project.

This educational paradigm is based on the premise that when nursing students are adequately prepared for EBP, and experience real-life change or innovation in the practice setting, they value EBP as an important dimension of their clinical practice. There are several advantages to the student (and the organisation) in undertaking this educational approach. Students receive guidance and mentoring from

nursing leaders, managers and educators throughout the learning process and they conduct their project in a healthcare environment similar to that in which they will eventually work. Students also undertake to present their project to the organisation and their colleagues as part of their learning assessment. Under this model, student presentations are approved as continuing education activities and staff are awarded continuing professional development (CPD) points for attending the presentations. For some sponsoring organisations, student projects have provided assistance in meeting annual quality standards, and others have been able to attract students back to the organisation for employment on graduation.[83] Another feature of this educational strategy is the deliberate cross-over between the management course and knowledge synthesis course in the graduate program. This translates to between-course collaborations in providing learning tools and conducting assessments, and to a blending of change management theory with research utilization.

The four educational components described in the research utilization/EBP model[83] are a blend of the CURN (Conduct and Utilisation of Research in Nursing)[82] and Stetler[80,81] models which essentially look at the five steps of EBP, and levels of evidence for nursing knowledge, respectively. While not directly applicable to the Australian educational setting, the educational components are relevant to the findings of this thesis and complement the frameworks for teaching EBP described above.

Killeen and Barnfarther[83] believe that success in applying EBP to the clinical setting depends on a comprehensive teaching and learning strategy for students which:

1. Applies the CURN research utilisation model which is based on the five-steps of EBP (identify a clinical problem, evaluate evidence regarding the clinical problem and nursing practice, determine the relevance of the evidence to the setting, transform the knowledge for practice, evaluate outcomes and modification of nursing practice). The important element of this educational component is the emphasis on using the strengths of the CURN model to recognise individual, group and organisational behaviours in order to fully implement evidence-based change.
2. The clinical manager, clinical educator and undergraduate student (the team) collectively undertake a systematic search of the literature, encompassing the full range of the knowledge base of interest. The teaching component actually identifies that searching for evidence also includes finding credible sources of 'non-research' evidence. The manager and educator provide peer support and guidance in finding the evidence.
3. The team critique the literature or other sources of evidence and rate the quality and strength of the evidence from a nursing perspective using the Stetler hierarchy which includes a number of sub-categories to further differentiate various evidence types.
4. Using one of several change/diffusion of innovation theories taught within the management course, students adapt, design and implement the innovation. After implementing the innovation, students continue with the project to complete the evaluation of outcomes (Step 5 of EBP) and to develop mechanisms for maintaining the innovation over time.

6.5 Recommendations for teaching EBP in Australian nursing

In this section the summarised findings of this thesis are considered in conjunction with ideas from the contemporary models of EBP education

described above to propose recommendations for teaching EBP to nurses in Australia. The recommendations are grouped into three main themes: the language of EBP, education for EBP, and those addressing EBP in healthcare. Although directed at nursing education, many of the recommendations could be applied to the teaching of EBP in any of the healthcare disciplines.

A model is then proposed for implementing these recommendations across a continuing professional development pathway. This is in the form of a conceptual framework that makes reference to the five areas nominated by the Taskforce[107] as the basis for identifying educational inputs, and in which one might expect to see a change in educational outcomes following the effective teaching of EBP. These five educational outcomes are: attitudes, knowledge, skills, behaviours and clinical performance.[107] The framework extends education for EBP beyond the academic boundaries of the undergraduate curriculum to the clinical context and the role of clinicians, educators and faculties in promoting EBP. An example of applying the conceptual framework for EBP to continuing education in nursing is shown in a post-registration education module in Appendix E. This module attempts, as a first step, to ensure that post-registration nurses in NSW are clear about differences in language and concepts relating to quality, health research and EBP within nursing practice.

6.5.1 Recommendations for teaching EBP in Australian nursing

Language

1. Encourage the use of a clear and common language for terms associated with research, evidence and EBP. It is

suggested that nurses adopt the term 'research and *other* evidence' to differentiate between the various sources of evidence nurses refer to for practice.

2. Establish workable definitions and appropriate competency statements for using evidence in practice and within particular clinical contexts. These definitions should be acceptable and applicable to all health disciplines within the context.

Education

3. Nursing faculties and schools are encouraged to state their intentions for the promotion of EBP in nursing programs and articulate the desired educational objectives for EBP at each learning stage (undergraduate, graduate certificate/diploma, Master's and PhD).
4. Recognise that a range of educational outcomes (for attitudes, knowledge, skills, behaviours and clinical performance) need to be considered in responding to gaps and variations in current EBP knowledge, skills and attitudes among students, clinicians and educators.
5. Ensure adequate skill preparation for EBP. Expectations for EBP learning outcomes need to be responsive to differences in nurses' learning styles, reflective of the stage learners are at in their nursing career, and appropriate to the context of the nurses' work.
6. Determine more practical ways of assessing students' preparation for EBP. Traditional approaches based on the mastery of isolated EBP micro-skills (such as critical appraisal) do not adequately reflect the range of skills or level of confidence or competence in these skills required of the evidence-based practitioner.

Healthcare

7. Greater effort is required from education providers and clinicians to form and maintain networks which link questions from the clinical setting to opportunities for EBP innovation which are likely to be of mutual benefit to students, the practice setting and patients.
8. Nurses working in the clinical setting providing direct care to patients or clients should have access to pre-appraised evidence summaries and guidelines, and the

support of EBP champions for evidence translation and implementation.

9. Organisations can facilitate evidence-based healthcare by making EBP an educational and organisational objective, supporting and developing EBP champions in the workplace and providing the appropriate tools for EBP within the clinical and academic environment.

6.5.2 A conceptual framework for EBP nursing education

The following framework (Table 6.1) proposes concepts for teaching and learning EBP in the form of educational inputs along the developmental pathway to becoming, and then practicing, as a nurse in the Australian healthcare setting (represented by columns in the Table). The rows of Table 6.1 represent the five educational outcome areas in which one might expect to see change following the effective teaching of EBP, as proposed by Straus et al.[107] Attitudes, knowledge, skills and behaviours are regarded as personal factors that can be influenced by educational inputs proposed in the framework. The final row in Table 6.1 (clinical area or practice setting) describes the external factors which can facilitate individual learning and improve performance in the clinical environment, such as providing undergraduate year coordinators for EBP and fostering partnerships with community and other healthcare organisations.

As stated above, many of the concepts relating to EBP education could be applied to other healthcare disciplines. Proposing concepts, rather than prescribing what should be taught, allows the broader mission and goals of each clinical, academic or professional group to be incorporated into the framework. Fully implementing evidence-based change relies on the support of the entire healthcare team and the healthcare

organisation, but actually making the decision to value and promote EBP as an educational and organisational objective is the important first step.

The framework and undergraduate nursing education for EBP

The conceptual framework for teaching EBP begins with the undergraduate program as the foundation or entry point to nursing education. In Table 6.1 the framework proposes that undergraduate students need to hear a clear and consistent use of language around EBP (from Recommendation 1). They need to know how to construct a clinical question and to learn basic searching skills for finding information. They should know how to access EBP champions and knowledge brokers in the settings in which they will work. 'Lack of time' is consistently raised as a barrier to evidence implementation, but it is also a barrier to achieving the other steps of EBP. Therefore, the framework proposes that it is more time-efficient for undergraduates to learn how to judge the quality of existing EBP support materials such as guidelines and evidence summaries wherever possible, and to begin practice with skills for implementing evidence in the 'using' mode (as described above in Section 6.4.1) to close initial gaps in their practice knowledge.

It has been a long-standing challenge for providers of undergraduate nursing education to blend theoretical and practical approaches (often referred to as the theory-practice gap). I believe that part of this difficulty has arisen from trying to apply uni-disciplinary theories (of nursing) to professional practice that does not occur in a uni-disciplinary environment. In this regard, teaching EBP within the wider context of

healthcare begins by establishing a level of agreement across the professions about expectations for using evidence in practice and developing workable definitions for the best available evidence within particular clinical contexts (from Recommendation 2). For example, oncology teams rely on evidence from randomised controlled trials and meta-analyses to decide the best treatment for a particular malignancy. The palliative care team may source qualitative studies to access the best available evidence for decisions about quality of life. In regard to undergraduate education, opportunities for interdisciplinary collaborative learning can be increased by cross-faculty teaching and sourcing lecturers from faculties that offer specialist skills in EBP, or use innovative approaches to teaching this subject. Education opinion leaders interviewed for this thesis who were located within multi-disciplinary faculties universally supported cross-faculty teaching and reported that students also valued the different perspectives offered by shared learning with students from other disciplines.

Although NSW universities and health services have attempted to form and maintain partnerships between the academic and clinical setting through the establishment of Clinical Chairs in nursing, these positions are only just beginning to push the boundaries of possibility for mutually beneficial projects such as those described above in the research utilisation and EBP teaching strategy of Killeen and Barnfarther.[83] Currently, undergraduate clinical placements are mainly facilitated by the university, but healthcare organisations are increasingly recognising the important role of clinically-based educators in supporting students and clinicians. Clinical educators develop a

specialist knowledge and understanding of their practice setting, and with clinical leaders and managers, are in a unique position to engage the student in developing and evaluating actual EBP innovations in the workplace (from Recommendation 7).

The assessment of learning outcomes for EBP is also currently constrained by the traditional educational approaches maintained by many of the healthcare disciplines. These approaches perpetuate the notion that EBP is oriented to 'research' or other isolated areas of skill development (micro-skills) which are able to be easily assessed by standard essay or examination techniques. These forms of assessment contribute to divorcing EBP from the patient, the context of the clinical question and the practice setting. For example, assessing competence in EBP by asking a student to critically appraise a research article is appropriate, but only if it is related to the broader educational context of EBP (why it is done, what kind and level of evidence does it provide in response to a clinical question, and how can the results of the research be used in the practice setting to implement evidence-based care or bring about practice change). Further, EBP assessments do not have to rely on a 'one subject/one semester' approach, as currently happens in many NSW undergraduate programs. Given a basic grounding in EBP skills, it is argued that an undergraduate student engaged in just one part of a broader and ongoing evidence implementation project, which has meaning and purpose in the clinical setting, can achieve a successful and more realistic learning experience in EBP. Surely it is possible for academics and clinicians to collectively define aims and learning outcomes for each stage of a practice-based project that identifies and

responds to an organisational need, and to devise more innovative assessment tasks based on mutual benefit (from Recommendations 6 and 7).

The framework and post-registration nursing education for EBP

The role of the healthcare professional in contemporary Australian healthcare is complex and multifaceted. It involves learning a highly specialised body of knowledge that traverses a range of skills and which is applied in an ever-changing politically and socially constructed environment. The field of post-registration education is equally complex with regard to what students 'need to know' about EBP.

In nursing, post-registration education opportunities range from various forms of work-based training, to formal continuing education programs such as Graduate Certificates/Diplomas, Master's and PhD courses. Post-registration or postgraduate students are adult learners who bring to the learning environment a range of experience from their clinical work and previous education. There is no 'one size fits all' for teaching EBP to this group. The conceptual framework in Table 6.1 makes suggestions for teaching EBP in post-registration programs using the same five educational outcome areas (attitudes, knowledge, skills, behaviours and clinical performance) in response to Recommendation 4. These suggestions are derived mainly from the results of the EBP survey reported in *Chapter 3* as well as from the views of nursing opinion leaders (*Chapter 4*) and the education literature outlined in *Chapter 2*.

Table 6.1: Conceptual framework for teaching evidence-based practice in nursing

EDUCATION OUTCOMES ↓	***Undergraduate programs***			***Post-registration programs***	***EBP leaders***	***Faculty or Organisation***
	1st year	*2nd year*	*3rd year*		*educators, clinicians & opinion leaders*	
Attitudes	Recognise that knowledge gaps exist in practice Be open to seeking new knowledge	Develop an understanding of research and other forms of evidence that relate to the context of nursing practice	Develop an understanding of the ethical and practical issues around EBP and how these impact on implementing evidence	Develop a questioning attitude towards practice problems Value principles of life-long learning	Be aware of own views towards EBP and the potential for these to impact on others	Promote EBP as a desired educational objective
Knowledge	Understand the difference between quality, research and EBP	Acknowledge that multiple knowledge deficits exist in clinical practice	Recognise that knowledge from practice, patient values and the context will impact on clinical-decision making	Value contextual information and specialty experience of the patients condition Articulate and acknowledge all sources of evidence used in practice	Articulate and acknowledge sources of evidence used in teaching that can be applied to practice	Identify EBP leaders and knowledge champions and recognise their contribution to the organisation
Skill	Construct a focussed clinical question for practice knowledge Basic searching skills	Advanced searching skills (use of evidence summaries) Critical appraisal skills	Understand barriers to organisational change and change management theories Audit and simple measurement and evaluation techniques	Become an evidence champion Develop skills for practising (or 'doing') EBP relevant to area of practice	Model behaviour and skills used to determine best available evidence for the learning or practice area	Use clinical EBP leaders or champions in tutorial, small group or project work with students

Table 6.1: Conceptual framework for teaching evidence-based practice in nursing

EDUCATION OUTCOMES	***Undergraduate programs***			***Post-registration programs***	***EBP leaders***	***Faculty or Organisation***
↓	*1st year*	*2nd year*	*3rd year*		*educators, clinicians & opinion leaders*	
Behaviour	Attend research presentations from students and staff Read research papers Ask questions about practice	All previous; and Read research papers and reports critically	All previous; and Learn a consistent language for EBP Understand strategies for implementing evidence in practice	Use a consistent language for EBP Recognise responsibility as a EBP leader and role model Support incorporation of new knowledge into practice	Use a consistent language for EBP Model the use of evidence in teaching and clinical decision making Attend research presentations of students, staff and clinical colleagues	Use a consistent language for EBP Clearly articulate desired educational objectives for EBP at each learning stage (undergraduate, graduate certificate/ diploma, Master's and PhD)
Clinical area or practice setting	EBP year co-ordinator	EBP year co-ordinator Develop understanding of links between research and practice	EBP year co-ordinator Participate in activities which propose to close gaps between research and practice knowledge Identify EBP leaders and knowledge champions in the clinical setting	State practice problems as focussed clinical questions Undertake appropriate action to find evidence (or use knowledge broker). Establish a relationship with an EBP unit, team or network to implement findings into practice.	Include reflection on use of evidence for teaching and practice in annual performance review Develop and maintain partnerships and networks with clinical, educational and local community organisations for knowledge transfer	Clinicians and educators to agree on desired educational outcomes of EBP for themselves and for students of nursing programs Promote access to evidence summaries and guidelines

Although findings from the EBP survey cannot be generalised to all post-registration nurses, a number of general principles can be applied in using the conceptual framework. Teaching strategies for EBP in post-registration nursing education must value the experience that adult learners bring to the learning environment. The orientation of the learning should move away from content-driven approaches to more self-directed, problem- or situation-based styles (from Recommendation 5). Further, the imperative for post-registration nurses to learn research methods should be directed towards those undertaking research degrees, not those undertaking advancement in clinical specialties.

Regardless of the different views they held about what and how EBP should be taught, the NSW opinion leaders interviewed for this thesis were clear that undergraduate programs begin preparation, but real development as a nurse occurs after graduation and entry to practice. The context of the clinical setting, the goals and values of the organisation, the patient/client group and the availability of resources will all impact upon how the learner can and will engage with EBP when it is presented within the context of post-registration education. Expectations for EBP education in post-registration courses therefore need to be responsive to differences in nurses' learning styles, reflective of the stage learners are at in their nursing career, and appropriate to the context of the nurses' clinical work (from Recommendation 5).

In the conceptual framework for nursing education (Table 6.1), students move from a position of using pre-appraised evidence summaries and guidelines supplied by others to initiating practice questions and developing skills for the 'doing' mode of evidence implementation in which the first four steps of EBP (asking, accessing, appraising and applying evidence) may be employed. With the assistance of clinical nurse educators, it is the post-registration nurse (and not the new graduate) who has detailed knowledge of their organisation and practice environment and who is therefore in the best position to determine appropriate responses to EBP within their setting (the questions, the research and other evidence, the practice changes required and how to do this). In more senior clinical or managerial roles, post-registration nurses may be in a position to become evidence champions and facilitate EBP for others (from Recommendation 8). They are also responsible within these more senior positions for evaluating and sustaining new practices through policy development and education. As stated in the recommendations, organisations can further facilitate this process by supporting and developing EBP champions among those who are undertaking post-registration education (from Recommendation 9) and by making resources such as computers and time available. Post-registration education also provides an appropriate occasion to utilise opportunities for EBP already available in the workplace, such as organising for interested students to undertake practical experience in institutionally-based research centres, practice development units or EBP centres.

The framework and continuing professional development in EBP

The conceptual framework for EBP education does not exist only within university or college based pre- and post-registration programs. EBP leaders (educators, clinicians and opinion leaders), faculties (universities or colleges) and the clinical setting (organisations) all have a part to play in education for EBP. The findings of this thesis have consistently recognised the role of context in making evidence-based decisions, and the important contribution that leaders in the academic and clinical setting can make towards the acceptance and use of EBP.

Aspects of applying the conceptual framework in Table 6.1 are illustrated in a post-graduation distance education module entitled *Quality, health research and evidence-based practice* (Theme 3) in Appendix E. I was commissioned to write Theme 3 as part of a subject (*Developing Advanced Nursing Practice*) for post-registration nurses undertaking Graduate Certificate courses at a nursing college. The philosophy of the subject is to explore the notion of advanced nursing practice in relation to the context of the health care system, the clinical practice domain, specialisation in nursing, and research and evidence-based practice in the nursing profession. The subject can also be undertaken as a 'stand-alone' continuing professional development (CPD) unit for which students receive CPD points. The subject is offered in the distance mode to post-registration nurses and is copyrighted to The College of Nursing. As it was written in December 2005 (as I was completing this thesis), it contains many of the principles and ideas put forward in this chapter and therefore

provides an example of how some of the recommendations for teaching EBP in nursing may be applied. Acknowledgement is given to Roderick Reynolds and Julienne Onley who participated in the development of Topic 1 (Quality) in Theme 3 (Appendix E).

In writing this module, I aimed to make the distinction between quality and research, and research and EBP, very clear at the outset by including a number of learning activities that were designed to make the student think about the different language and processes that are used for each. The content was informed by the results of this thesis, particularly the survey responses of post-registration nurses who were students of the College at the time (*Chapter 3*). Respondents to the survey were of similar age and educational background (some hospital trained and some university prepared) to all College students, and like these students, worked in a range of specialty practice areas in geographically dispersed locations across NSW or Australia. As outlined in *Chapter 3*, their understanding of evidence for EBP was varied and likely to be influenced by a number of factors including their past educational influences, previous experience with research or EBP, and the context of their clinical work.

With reference to the conceptual framework for teaching EBP in Table 6.1, the *Quality, health research and evidence-based practice* module which makes up Theme 3 of the subject *Developing Advanced Nursing Practice* in Appendix E actually revisits a number of the educational outcome objectives outlined for undergraduate students. This is because my previous experience of teaching EBP and the results of this thesis had proven to me that it was incorrect to assume that post-registration

students undertaking further education had already developed basic skills for EBP, or that their level of knowledge for using evidence in practice would be the same. Therefore, educational inputs that are regarded as foundational to developing attitudes, knowledge and skills for EBP in undergraduate education also form the basis of this post-registration education module. Table 6.2 replicates the section of Table 6.1 which refers to these foundation level skills, some of which are applied within the *Quality, health research and evidence-based practice* module for post-registration continuing education in Appendix E.

Table 6.2: Foundation principles of the framework for EBP education

EDUCATION OUTCOMES	***Foundation components of the undergraduate EBP education framework applied to post-registration continuing education***		
↓			
Attitudes	Recognise that knowledge gaps exist Be open to seeking new knowledge	Develop an understanding of research and other forms of evidence that relate to the context of nursing practice	Develop understanding of the ethical and practical issues around EBP and how these impact on implementing evidence
Knowledge	Understand the difference between quality, research and EBP	Acknowledge that multiple knowledge deficits exist in clinical practice	Recognise that knowledge from practice, patient values and the context will impact on clinical-decision making
Skill	Construct a focussed clinical question that contains relevant components Basic searching skills	Advanced searching skills (evidence summaries) Critical appraisal skills	Understand barriers to organisational change and change management theories Audit and simple measurement and evaluation techniques

The module attempts to establish a foundation level of knowledge and understanding about quality, research and evidence before introducing the student to EBP principles, particularly evidence implementation. It then encourages the student (in this case a clinical

nurse) to develop a more questioning attitude towards their practice using this foundation level of knowledge. Distance education packages are based on self-directed learning approaches. The considerable practice knowledge these nurses already have is used as a vehicle for bringing EBP to their clinical domain. EBP occurs in real-time, in the real-world with real people. The distance education module in Appendix E encourages students to engage with others involved in quality, research and EBP within their own organisation in an attempt to connect them to sources of support (people, places and publications) for undertaking EBP and for successfully implementing practice change.

Conclusion

The impetus for this thesis arose out of questions I had about how best to teach EBP to post-registration nurses in NSW. I started with the belief that registered nurses had a basic level of understanding, but more importantly, a shared view of EBP. I thought that finding consensus on the meaning of evidence among leaders of the profession would allow me to define what EBP in nursing actually meant and guide me in teaching nurses how to incorporate evidence into the real world of their practice. My understanding of EBP has evolved throughout this process. The findings of this thesis were not what I had expected but they do offer another perspective on why evidence implementation can be so difficult for nursing, and perhaps for other healthcare professions.

Individual ways of attributing meaning to the world are valued in nursing and by society in general. However, in relation to EBP it is clear that while some nurses understand evidence in a similar way, others have very different understandings. In addition to providing the first comprehensive overview of Australian nurses' knowledge and skill for EBP, this thesis has identified that a large degree of variation is evident in the ways in which evidence for EBP is understood by nurses. For some NSW nurses interviewed for this thesis, professional experience is regarded as an equally valid form of evidence as is research. Others had a similar view to mine: evidence derives from research findings brought to practice in the context of a clinical decision which involves the patient and their preferences, the expertise of the clinician or staff, and the organisational or clinical environment. It is not suggested that different ways of seeing the world can or should be discouraged in nursing as there can be no 'right' or 'wrong' attributed to individual ways of understanding. However, a consequence of nurse leaders and others in

nursing holding differing definitions of evidence implies that their understanding and use of language for EBP will also be different (because evidence is a component of EBP). It is this variation which I believe has contributed to the piecemeal approach to EBP education in nursing in NSW and plays a part in maintaining the less than ideal preparation of undergraduates for using evidence in practice.

Combined with the range of definitions of evidence held by nurses in NSW, current approaches to undergraduate nursing education are failing to teach students the skills they need for EBP. The results of all three studies in this thesis suggest that new graduates will continue to struggle with the practical and theoretical concepts involved in delivering evidence-based nursing care. The approach to EBP education in NSW does not suffer because EBP is not supported by nurses and nursing. For a number of reasons already outlined in this thesis, EBP has simply not attained sufficient value within the curriculum of a practice-based discipline to co-exist with the other fundamental nursing skills that are taught. EBP has not yet sufficiently infiltrated the collective mind of the nursing profession to be seen as a complementary – indeed necessary – part of foundational skill preparation for nursing practice.

The promotion of EBP must be encouraged as a fundamental educational objective of nursing schools and faculties. If EBP is not an expectation of the educational preparation of nursing students, the competing demands of a currently over-crowed three-year undergraduate program in NSW mean that it can easily drop off the radar of educators and clinicians alike. This is what leads to the irregular application of EBP within undergraduate subjects, such as that observed in some of the subject outlines analysed for this thesis. The format of these subjects suggests that, currently, many will fail to deliver the secure and stable knowledge base that is required for the development of an

evidence-based profession. Therefore, in suggesting a framework for teaching EBP in nursing in Australia, it was recommended that nursing faculties and schools agree on the promotion of EBP as a consistent and desired educational objective, and make a commitment to identifying the specific EBP learning outcomes required for each learning stage (undergraduate, graduate certificate/diploma, Master's and PhD level nursing programs).

Similar to their colleagues around the world, NSW nurses support EBP. Their knowledge and skill for EBP is growing but currently remains variable. Beginning nurses require skills for incorporating the best available evidence into clinical practice across a range of clinical situations, but this does not equate to learning skills for 'doing' research. The educational processes for learning research and EBP are fundamentally different, but it is my view that the indiscriminate use of the words 'research' and 'evidence' by nursing leaders has actually contributed to the perception within nursing that these are the same thing. This confusion can be seen in the disagreement among opinion leaders about whether to teach skills for incorporating evidence into practice (asking, accessing, appraising, applying and assessing), or to teach skills for 'doing' research (research methods and writing ethics applications and research proposals). Many research skills are complex and are likely to be of most value in nursing if taught within the provenance of post-registration research degrees, where appropriate guidance is given on the choice of method and where the research undertaken has a chance of producing outcomes that are actually useful to patients/clients and to the profession.

It is the context of the real world of clinical practice which dictates the kind of EBP skills individual nurses might need to know, and whether their practice requires them to be evidence 'doers', 'users' or 'replicators'. For the majority of working nurses, post-registration continuing education programs and

specialist clinical education courses can be another source of mixed messages about whether nurses are supposed to be evidence-based practitioners or nurse researchers. In NSW and across Australia in general, this confusion is reiterated in nursing role descriptions, for example, which demand active participation in research at relatively junior levels of practice and through standards set for the nursing and midwifery professions by regulatory authorities which do not clearly differentiate expectations about researching from expectations about EBP.

This thesis has recognised that post-registration nurses form a large and diverse group of geographically dispersed individuals representing all ages and stages of a professional development pathway. Nursing professional pathways sometimes remain generalist, but most often branch into speciality areas of practice in which nurses can achieve very advanced levels of specialist knowledge and skill. Patricia Benner[193] is well known in nursing for her model of skills acquisition which describes how beginning nurses (or novices) progress to become 'expert' practitioners. The relevance of Benner's work to this thesis is that it recognises that the development of skill and knowledge in nursing practice can be represented along a continuum, and that movement along this continuum can occur in either direction. Therefore, competence within a specialty area of practice can occur through education and experience, but if nurses encounter a new or unfamiliar area, they do not remain in the same advanced position on the continuum, but return to the beginning. This is also true for competence in EBP. It cannot be assumed that even very advanced clinicians (or highly experienced academics) are automatically privileged when it comes to having expertise in either research or other aspects of EBP within an area of practice. Learning within nursing is influenced by many personal, professional and career choices. The clinical

specialty, disciplinary background or paradigm from which nurses gain their professional knowledge and experience are likely to influence their opinion and approach to using evidence in practice, and how they communicate or model this approach to others.

It is these thoughts which have collectively led to the recommendations proposed in this thesis and which also raise another consideration for teaching EBP in nursing. Nursing professionals should be encouraged to be more aware of their potential (both positive and negative) as opinion leaders and role models for EBP. We know that nurses prefer to learn from other nurses in both the clinical and academic setting. Therefore, we should use a consistent language for EBP. We can demonstrate our support of EBP by articulating and acknowledging the sources of evidence we use in our practice and our teaching. We can broaden our own clinical and academic networks to learn more from other disciplines. This is part of the foundation for developing EBP in nursing that I believe has received little attention and which I have attempted to build into the recommendations and framework proposed in this thesis.

My own experience is that, currently, EBP units or nursing practice development units in hospitals and other health organisations around Australia could be better utilised as a 'space' for both undergraduate and post-registration nurses to engage in EBP. At present, I am aware that only very few of these units have succeeded in establishing themselves as a link between research and practice within their organisation. Even fewer appear to have been able to establish and maintain networks with other units (founded by nursing or other healthcare professions) dedicated to achieving the goal of evidence-based healthcare.

The message from the Australian Nursing and Midwifery Council[1,2] in 2006 is clear. Beginning registered nurses and midwives in Australia are expected to have sufficient preparation to enable them to provide evidence-based nursing care to people of all ages and all cultural groups, to practice within an evidence-based framework and to ensure that evidence from research is incorporated into their practice. This is a very large demand to place upon a beginning practitioner and is one, which I believe, has been made without a full understanding of the skills and knowledge necessary to achieve this level of competence. Evidence for the effectiveness of EBP is slowly accumulating and nursing is not alone in facing the dilemmas involved in teaching EBP. However, a consistent approach to EBP education is surely required across all health disciplines before demands for evidence-based healthcare can be met. There is a need for the healthcare professions to articulate what kind of evidence is relevant within the context of their practice, to determine the style and content of EBP education for their students across all levels of practice, and to demonstrate or model EBP skills in their teaching and patient care. Strong leadership is required to undertake this kind of commitment to EBP but for Australian nursing, EBP leaders are in great demand but currently few in number.

Finally, I believe that all teachers of EBP (and I include myself in this) should more often avail themselves of opportunities for collaboration, and should actively encourage the role of EBP champions and knowledge brokers across the health professions. Whether physiotherapist, occupational therapist, dentist, doctor, midwife or nurse, and whether from a clinical, managerial or academic perspective, we are all aiming for the same goal: to provide the best possible care to our patients and clients. The value or worth of the evidence used by each of us must be judged according to many and varied factors. It is

not possible to dictate the respective worth of this evidence – only to provide the clinician, manger or teacher the tools for making decisions within the context in which they work. Articulating a commitment to EBP, using a common language, and determining the knowledge of most worth to enable healthcare professionals to practice using the best available evidence within the context of their work is imperative as the first step for any profession which aims to deliver evidence-based care.

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Appendix A: NSW Nursing Workforce Research Project 2000

NSW Nursing Workforce Research Project

Available from: URL:http://www.health.nsw.gov.au/nursing/publications.html

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Executive Summary

Background and Aims of the Project

The Nursing and Health Services Research Consortium was commissioned to conduct the New South Wales (NSW) Nursing Workforce Research Project in consultation with the Nursing Branch of the NSW Health Department in January 2000.

The aims of this project were:

1. To provide detailed information and analysis on the reasons why nurses who are currently registered or enrolled in NSW are not in the nursing workforce and;
2. To identify what conditions and/or incentives are required to encourage the study population to return to the nursing workforce in this State.

Analysis of the nursing workforce database of the Nurses Registration Board of NSW (NRB) indicated that in 1998, approximately one-third of nurses who were registered to practice in NSW were either not working, or were not working in nursing. This equated to a potential pool of 30-35,000 nurses who had maintained nursing registration in NSW who may be available for recruitment back into the nursing workforce. This group of registered and enrolled nurses (those who were actively registered on the NRB database in 1998) formed the population for this study.

Project Method

The Nursing Participation Survey 2000 was developed and posted to the 31,117 study population. This population included all registered and enrolled nurses who had indicated that they were not working in nursing in NSW at the time of their NRB annual renewal survey in 1998; those whose employment details were unknown because of incomplete information on the NRB survey; as well as those for whom complete address details were available. Respondents to the survey were given the opportunity to further discuss nursing workforce issues through participation in a telephone interview.

Results

A total of 10,089 surveys were returned suitable for analysis. Excluding 1,374 surveys 'returned to sender' because of incorrect address, the survey yielded a 34% response rate.

Seventeen percent of respondents were enrolled nurses (n=1,601), 22% were certified midwives (n=2,020) and the majority (n= 5,671 or 61%) were registered nurses. Ninety-three percent of respondents were female and 7% male.

The three most common areas of residence for respondents were 16% (n=1,403) from Northern Sydney Area Health Service (NSAHS), 12% (n=1,026) from South Eastern Sydney Area Health Service (SESAHS) and 10% (n=841) from the Hunter Area. The majority of respondents (73%) resided within metropolitan Area Health Services. This reflects the patterns of residence in the study population.

Forty one percent (n=3,909) of respondents indicated that they were in fact working in nursing at some time during 1998 and 34% of these (n=3,222) have remained in the workforce in 2000. Seven percent (n=689) of the nurses who indicated that they were either not working, or were not working in nursing on their 1998 NRB annual registration renewal have since moved back into the nursing workforce.

Twelve percent of respondents were living and/or working in other states or territories of Australia or overseas (n=1,221), 11% (n=1,051) who were working in nursing in 1998 have since moved onto other careers and a further 5% (n=490) have retired.

From the 10,089 respondents, 36% or 3,253 nurses indicated that they would consider the possibility of returning to nursing in NSW. At the time of the survey, 2,721 of these nurses were residing in NSW and approximately 800 of these indicated that they were actively looking for work in nursing in this state.

The main reason respondents cited for leaving nursing was family responsibilities (n=1,410 or 28%). The second most common reason was to move into a role that was more suited to their lifestyle and responsibilities (n=513 or 10%). In choosing from a list of other reasons, shift work requirements and concern about retraining if returning to nursing were the most frequently selected.

In determining a profile of the 3,253 survey respondents who indicated that they would consider returning to work in nursing in NSW the following points are noted:

- the average age of the group was 40 years (standard deviation 8 years)

- 2,172 indicated that they had dependent children, 580 of these (27%) having children at home less than 4 years of age. Fifty percent (n=1,053) had a child at home under a median age of 6 years
- 67% reside within metropolitan Area Health Services, the three most common areas of residence being NSAHS (n=444 or 16%), Hunter (n=282 or 10%) and SESAHS (n=257 or 9%)
- the most common incentives to return to work in nursing suggested by respondents were suitable working hours (n=1,986 or 67%), better pay (n=899 or 30%), support in education and retraining (n=762 or 26%), improved working conditions (n=542 or 18%) and management or work process changes (n=518 or 17%)
- 60% (n=2,245) of respondents desired to work part-time, with 1,681 of these indicating a preference for working only on weekdays (Monday to Friday)
- there was an almost even split between the desire to work in a hospital (50%) or community (44%) setting, the remainder indicating other settings such as residential aged care and rehabilitation
- the most preferred specialty areas for return to work were surgical or operating theatre (1,080 or 32%), midwifery (n=527 or 16%), critical care (n=441 or 13%), medical (n=413 or 12%) and aged care (n=339 or 10%)
- of those seeking employment in nursing, the three most common choices of work area were NSAHS (n=88 or 15% of responses), Northern Rivers (n=51 or 9% of responses) and the Hunter Area Health Service (n=43 or 7% of responses)

Telephone interviews were conducted with 98 respondents. The following points are noted from the interviews:

- the physical and demanding nature of nursing work
- lack of flexibility around working hours and the lack of control over choice of the type and hours of work
- clinical or ward nursing was perceived by some to have a definite 'use-by date'
- while individuals could not easily separate their reasons for leaving nursing from choosing incentives to return, common themes were the lack of workplace support such as childcare, education and retraining, mentoring, support from

management and increasing the level of pay to match the level of responsibility and qualifications

- some nurses expressed their desire for autonomy, participation in clinical decision-making and time to care for their patients
- others noted a disproportionate growth in nursing management positions, with a lack of support and encouragement from managers at the clinical level perceived as a strong disincentive to work in nursing
- some nurses expressed a dissatisfaction with the nursing profession in the context that nursing is not just a job but comprises a caring role that is often unable to be fulfilled
- there was a lack of knowledge about retraining opportunities and/or refresher courses in nursing

The sample of respondents (n=10,089) was recalibrated for response bias and used to estimate the entire number of nurses not working in nursing in 1998. This is estimated to be 15,939 nurses. This is approximately 50% less than the original estimate of 30-35,000. It must be stressed, however, that these figures do not represent actual data. They are derived by ratio estimation from the sample of survey respondents.

Of these estimated 15,939 not working in nursing:

- an estimated 4,326 nurses (27%) are lost to nursing in NSW, some having retired and others responding that they would not consider returning
- 2,260 nurses (14%) are estimated to have returned to nursing in NSW during the period between administration of the two surveys
- an estimated pool of 9,353 nurses may consider returning to nursing in NSW. Details of these analyses are given in Section 6.0 of the report.

Limitations of the Study

The study is based on figures from 1998 using a sample selected from a 'snapshot' in time. It does not capture the movements of all other members of the nursing workforce between 1998 and 2000 who may have left the nursing workforce and/or have returned in this period of time.

Another limitation of the study is the definition of what 'work in nursing' actually incorporates. Although 'work in nursing' was defined in the same way as used in the NRB annual renewal survey, how respondents choose to interpret their role within this definition was variable.

Conclusions

In line with the demographic profile of the 10,089 survey respondents, nurses identified family responsibilities and lifestyle issues around shiftwork as the main reasons for leaving nursing. The level of dissatisfaction with shiftwork was highest among those not currently working in nursing (or recently left), supporting the contention that inflexibility of working hours continues to be a major factor influencing nurses decisions to leave the workforce. Increasing the level of flexibility around working hours and providing a choice around what hours are to be worked (for example permanent shifts to enable the organisation of family life) were identified as important incentives to return to the nursing workforce in NSW. Further conditions and incentives identified by respondents were financial recognition commensurate with the level of responsibility and additional qualifications held, better working conditions and financial assistance with retraining.

Appendix B: Nurses' perceptions of Evidence-based Practice Questionnaire

Nurses' perceptions of Evidence-based Practice

Evidence-based practice (EBP) has been variously <u>defined as</u>:

a. An approach to practising [healthcare] in which the clinician is aware of the evidence in support of his or her clinical practice and the strength of that evidence.

b. The process of systematically finding, appraising, and using contemporaneous research findings as the basis for clinical decisions.

c. The conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients.

The intention of this survey is to ask nurses about:

Section 1: Attitudes towards Evidence-Based Practice in nursing

Section 2: Literature searching and finding evidence

Section 3: Appraising research literature and evidence

Section 4: Familiarity with some technical terms used in EBP

Section 5: About you and your nursing practice

Many of the questions require you to circle a number that best matches your opinion or response to the statement.

EXAMPLE - "The effect of 'global warming' is over-rated and will probably not affect our lives."

Strongly Disagree 1……..2……..(3)……..4……..5……..6……..7……..8……..9……..10 Strongly Agree

Indicates quite strong disagreement with this statement (3 on a scale of 10).

Section 1: ATTITUDES TO EVIDENCE-BASED PRACTICE

1. How would you describe your attitude towards the current promotion of evidence-based practice?

Extremely Welcoming 1 2 3 4 5 6 7 8 9 10 Extremely Unwelcoming

2. How would you describe the attitude of most of your nursing colleagues towards evidence-based practice?

Extremely Welcoming 1 2 3 4 5 6 7 8 9 10 Extremely Unwelcoming

3. How useful are research findings in your day-to-day management of patients?

Extremely Useful 1 2 3 4 5 6 7 8 9 10 Totally Useless

4. Using one of the definitions of 'evidence' on the first page, what percentage of your clinical practice do you feel is currently evidence-based? (Please circle)

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

5. Implementing evidence-based practice improves patient care.

Strongly Agree 1 2 3 4 5 6 7 8 9 10 Strongly Disagree

6. Evidence-based practice is of limited value in nursing because much of nursing care lacks a scientific base.

Strongly Agree 1 2 3 4 5 6 7 8 9 10 Strongly Disagree

7. The adoption of evidence-based practice, however worthwhile as an ideal, places another demand on already overloaded nurses.

Strongly Agree 1 2 3 4 5 6 7 8 9 10 Strongly Disagree

WHAT DOES 'EVIDENCE' MEAN TO YOU?

8. The original definition and understanding of Evidence-based Medicine has changed over time. What do you understand the word '*evidence*' (in the term 'evidence-based practice') to mean?

_____

_____

_____

_____

9. One can move from opinion-based practice towards evidence-based practice in three very different ways:

a. by learning the skills of evidence-based practice i.e. to identify and appraise the primary literature or systematic reviews oneself;
b. by seeking and applying evidence based summaries, which give the clinical "bottom line". Such summaries may be obtained from abstracting journals;
c. by using evidence based practice guidelines or protocols developed by colleagues or others.

Do any of the above methods seem familiar to you?

Please tick one or more boxes. a ☐ b ☐ c ☐ none ☐

Which of these methods are you using?

Please tick one or more boxes. a ☐ b ☐ c ☐ none ☐

Which of these methods would you be interested in using in the future?

Please tick one or more boxes. a ☐ b ☐ c ☐ none ☐

Which of these methods do you think is the most appropriate for nursing?

Choose one only a ☐ b ☐ c ☐ none ☐

10. How would you rate your ability as a nurse to translate evidence into practice?

Very little or no ability 1……2…….3……..4…….5 Good level of ability

ATTITUDES TO EVIDENCE BASED PRACTICE

11. Can you think of any significant changes to your nursing practice within the last 2 years?

☐ No ☐ Yes

If YES, were these changes implemented as a result of new findings or research evidence?

Can you describe how evidence based practice could be further facilitated in your own practice?

What do you think are the major barriers to evidence-based practice in nursing?

12. Have you ever attended any course(s) related to evidence-based practice?

☐ No ☐ Yes

If so, what was/were they called?

Section 2: LITERATURE SEARCHING AND FINDING EVIDENCE

In order to find research evidence, it is necessary to know where to start looking. Usually, this is achieved by asking a research question such as “Are admissions for asthma higher among adolescents who smoke?”…. Various sources can then be accessed to start looking for literature on that subject.

13. Have you ever received formal training in the conduct of literature searches?

☐ No ☐ Yes

If so, where or from whom?

_____

_____

14. Have you ever searched research literature or conducted a literature review yourself?

☐ No ☐ Yes

15. Can you remember the last time you performed a literature search that influenced your practice?

_____Month _____Year _____Never have

What was the topic?

_____

_____

Many literature sources are now available as bibliographic databases (databases of journals and other literature) and can be accessed via the Internet.

16. Have you heard of the following bibliographic/electronic databases?

MEDLINE (Medical citation index)

☐ No ☐ Yes

CINAHL (Cumulative Index to Nursing and Allied Health Literature)

☐ No ☐ Yes

CIAP (NSW Health Clinical Information Access Project Database)

☐ No ☐ Yes

COCHRANE (Database of systematic reviews and reviews of effectiveness)

☐ No ☐ Yes

EMBASE (Medical and allied health citation index)

☐ No ☐ Yes

17. How often in the last three months have you (or someone on your behalf) used a bibliographic/electronic database such as MEDLINE, CINAHL, CIAP, COCHRANE, and EMBASE to conduct a literature search?

0 1 2 3 4 5 6 7 8 9 10 or more times

18. The main reason you conducted these searches was for …? (please circle)

Studying for a course or project … Teaching purposes … Work-related project or staff training … To answer clinical question … Other

19. When performing a search of the literature how would you rate your….

ability to formulate the right research question

Very little or no ability 1 2 3 4 5 Good level of ability

ability to identify key terms to elicit relevant information

Very little or no ability 1 2 3 4 5 Good level of ability

ability to select relevant information

Very little or no ability 1 2 3 4 5 Good level of ability

keyboard skills

Very little or no ability 1 2 3 4 5 Good level of ability

ability to access the required database

Very little or no ability 1 2 3 4 5 Good level of ability

familiarity with search terms

Very little or no ability 1 2 3 4 5 Good level of ability

availability of advice

Very little or no ability 1 2 3 4 5 Good level of ability

availability of training

Very little or no ability 1 2 3 4 5 Good level of ability

time to conduct searches

Very little or no ability 1 2 3 4 5 Good level of ability

20. How would you rate your ability in searching the following electronic databases?

MEDLINE (Medical citation index)

Very little or no ability	1	2	3	4	5	Good level of ability

CINAHL (Cumulative Index to Nursing and Allied Health Literature)

Very little or no ability	1	2	3	4	5	Good level of ability

CIAP (NSW Health Clinical Information Access Project Database)

Very little or no ability	1	2	3	4	5	Good level of ability

COCHRANE (Database of systematic reviews and reviews of effectiveness)

Very little or no ability	1	2	3	4	5	Good level of ability

EMBASE (Medical and allied health citation index)

Very little or no ability	1	2	3	4	5	Good level of ability

21. What kind of professional literature do you mainly read?

Monographs	☐ Text format	☐ On-line
Nursing Journals	☐ Text format	☐ On-line
Specialist Nursing Journals	☐ Text format	☐ On-line
Medical and scientific Journals	☐ Text format	☐ On-line
Textbooks	☐ Text format	☐ On-line
Abstracts	☐ Text format	☐ On-line
Literature Reviews	☐ Text format	☐ On-line

Other (please specify)

FINDING EVIDENCE

There are a growing number of extracting journals, review publications and databases that can assist with finding evidence.

22. Please tick the boxes below to indicate your awareness or use of:

	Unaware	Aware but not used	Have Read	Used to help in clinical decision making
Agency for Healthcare Research and Quality (US National Guidelines Clearinghouse)				
Bandolier (published in Oxford)				
Evidence Based Medicine and Evidence Based Nursing (from the BMJ publishing group)				
Centre for Evidence Based Medicine (Oxford)				
Cochrane Database of Systematic Reviews (part of the Cochrane Library)				
National Health and Medical Research (NHMRC) Council of Australia (Australian Clinical Practice Guidelines)				
NHS Centre for Reviews and Dissemination (University of York)				
Cochrane Database of Abstracts of Reviews of Effectiveness (DARE) (another part of the Cochrane library)				

Please list any other sources of information that you have found relevant to evidence based practice

Section 3: APPRAISING RESEARCH LITERATURE AND EVIDENCE

Once the relevant literature is located, it is usually necessary to check the quality of the research study (critical appraisal) to decide whether the results are valid and will be useful in your particular situation.

23. Have you ever received formal training in the critical appraisal of research literature?

☐ No ☐ Yes

If so, where?

_____

_____

24. Have you ever performed a critical appraisal of research literature yourself?

☐ No ☐ Yes

25. Are you familiar with 'critical appraisal checklists'?

☐ No ☐ Yes

26. How would you rate your ability to conduct critical appraisals of the literature?

Appraising the kind of literature/journals you usually read to inform your practice

Very little or no ability 1 2 3 4 5 Good level of ability

Critical appraisal of randomised controlled trials

Very little or no ability 1 2 3 4 5 Good level of ability

Critical appraisal of systematic reviews

(Systematic reviews are the combined results from several carefully chosen studies on the same topic)

Very little or no ability 1 2 3 4 5 Good level of ability

Critical appraisal of meta-analyses

(Meta-analyses look at the magnitude of the effect of an intervention when several studies on the same topic are combined)

Very little or no ability 1 2 3 4 5 Good level of ability

Critical appraisal of qualitative studies

(Studies that generally use themes or content rather than numbers)

Very little or no ability 1 2 3 4 5 Good level of ability

27. How important do you think it is that nurses develop skills in the conduct of critical appraisal of research literature?

Extremely Important 1 2 3 4 5 6 7 8 9 10 Not at all Important

Section 4: TECHNICAL TERMS

28. Some of the following are terms are used in evidence-based practice and critical appraisal. Please indicate your reaction to them by ticking the appropriate box.

	Don't understand this term	Don't understand but would like to	Some understanding	Yes, understand and could explain to others
relative risk				
absolute risk				
systematic review				
odds ratio				
meta analysis				
clinical effectiveness				
number needed to treat				
confidence interval				
publication bias				
p-value				
sensitivity				
specificity				
heterogeneity				

OTHER TERMS

Please list any other terms you frequently come across in the type of research literature you read and that you feel are important to understanding evidence-based practice.

Section 5: ABOUT YOU

Finally, I would like to ask a few questions about you and your nursing practice. If you are not currently working, please go to Question 33.

29. Would you describe your usual nursing practice as being conducted mainly in a …

Please tick ☐ metropolitan area ☐ rural area ☐ remote area

30. Is your usual nursing practice mainly conducted at a…

Please tick ☐ hospital/institution ☐ home ☐ clinic ☐ other

31. In your usual nursing practice would you consider yourself working mainly…

Please tick ☐ alone ☐ in a team ☐ as part of group ☐ other

32. What is your professional working title?
e.g. RN, CNS – oncology, CNC – wound care and stoma management

---

33. Do you feel your professional working title (above) matches your level of practice?
Please tick the box in the first column that best describes your official level of practice, then in the second column, indicate what you believe to be the actual level of your nursing practice.

	Official level of Nursing Practice	**Actual level of Nursing Practice**
Registered Enrolled Nurse	☐	☐
Registered General Nurse	☐	☐
Registered Midwife	☐	☐
Clinical Nurse Specialist	☐	☐
Clinical Nurse Consultant	☐	☐
Advanced nursing practice	☐	☐
Registered Nurse Practitioner	☐	☐

34. Approximately how many patients/clients would you see each week? _____ patients/clients

35. You are ☐ male ☐ female

36. Your age is ☐ < 30 ☐ 30-39 ☐ 40-49 ☐ 50-59 ☐ 60+

37. Your primary nursing qualification (leading to registration) was

☐ hospital-based training ☐ university-based training

38. Year of registration as a nurse 19_____ or 20_____

Apart from your nursing registration, what further education/qualifications do you hold (please specify)?

_____

_____

_____

Are you a member of any professional organizations (please specify)?

_____

_____

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Thank you for your time

Please return the survey in the enclosed self-addressed envelope

Any questions?

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Appendix C: Interview guide

1. State time, date, participant name and location
2. Seek verbal confirmation of consent and agreement of conditions
3. Opening question:
    a. What is your opinion on evidence-based practice in nursing?
        i. Prompt: What do you think 'nursing evidence' is?
        ii. Prompt: Do you think nurses have actually articulated what they regard as 'evidence'?
        iii. Prompt: Do you think current nursing education prepares nurses for engagement in EBP/research based practice?
        iv. Prompt: Do you think there are certain types of people or specific nursing specialties that are likely to be more engaged in the notion of EBP?
        v. Prompt: Do you make a distinction between 'research' based practice and 'evidence' based practice?#
        vi. Prompt: How do you see the ANCI competency standards in regard to preparing undergraduates for engagement in research or EBP?#

4. Additional questions:
   To Deans, Heads of School and Academic Staff
    a. How is evidence-based practice or research currently taught with the undergraduate curriculum at this University?
        i. Prompt: How would you like it to be taught?
        ii. Prompt: According to your definition of 'evidence', what percentage of current clinical nursing practice do you believe is based on evidence?

   To Clinical Chairs, Directors and Others
    a. Do you have any thoughts on the way EBP or research is currently taught to nursing students at undergraduate level?
        i. Prompt: Do you think the current teaching of EBP adequately prepares nurses to implement evidence-based findings into their daily work?
        ii. Prompt: According to your definition of 'evidence', what percentage of current clinical nursing practice do you believe is based on evidence?

5. Is there anything else you would like to say about evidence-based practice in healthcare or nursing research generally?

Thank you for your time

 # prompts added in subsequent interviews

Appendix D: List of Interview Participants

University or College	Opinion Leader Position at time of interview
Australian Catholic University	Dr Cindy Leigh Head, School of Nursing (NSW)
Avondale College, Sydney	Dr Paul Race Dean, Faculty of Nursing and Health
Charles Sturt University – Bathurst	Mrs Heather Latham Course Coordinator Bachelor of Nursing School of Nursing and Health Science - Bathurst
Charles Sturt University - Dubbo	Dr John Grootjans Associate Head of School, Dubbo Campus
Southern Cross University – Lismore	Associate Professor Steve Kermode Acting Head, School of Nursing and Health Care Practices Professor Beverley Taylor Foundation Chair in Nursing, Director of Research
University of New England - Armidale	Dr Alan Avery Course Coordinator Nursing, School of Health Associate Professor Jenny McParlane Associate Dean (International and Entrepreneurial), Faculty of Education Health and Professional Studies
University of Newcastle – Callaghan	Professor Kathleen Fahy Dean, Nursing and Midwifery Faculty of Health
University of Technology, Sydney	Professor Jill White Dean, Faculty of Nursing, Midwifery and Health President, NSW Nurses and Midwives Board
University of Western Sydney	Associate Professor Cecily Hengstberger-Sims Head of Program, Bachelor of Nursing, School of Nursing, Family and Community Health
University of Wollongong	Dr Patrick Crookes Head, Department of Nursing Faculty of Health and Behavioural Sciences
Note: Two participants did not wish to be identified	**List continued over…**

Organisation	Opinion leader Position at time of interview
Charles Sturt University, Bathurst	Dr Heather Gibb Clinical Chair, Rural and Remote Nursing Rural and Remote Nursing Development Unit
La Trobe University, Melbourne and Joanna Briggs Institute, Adelaide	Professor Alan Pearson Professor of Nursing, School of Nursing and Midwifery, Bundoora Director, Joanna Briggs Institute, Adelaide
NSW Health Department	Professor Mary Chiarella Chief Nurse, NSW 2002-2005 Ms Judith Meppem AO Chief Nurse, NSW 1991-2002
Royal Hospital for Women, Sydney	Professor Colleen Stainton Clinical Chair, Women's Health Nursing
South Western Sydney Area Health Service, Sydney	Professor Rhonda Griffiths Director, Centre for Applied Nursing Research and the NSW Centre for Evidence-based Health Care
The College of Nursing (NSW)	Professor Judy Lumby Executive Director
University of Newcastle	Professor Margaret McMillan Deputy Executive Dean, Faculty of Health
University of Technology, Sydney	Professor Sally Tracy Professor of Midwifery Practice Development School of Nursing, Midwifery and Health

Appendix E: Developing Advanced Nursing Practice – Learning Guide (Theme 3)

The following materials were developed for the College of Nursing, 2005.

Theme 3 of the subject *Developing Advanced Nursing Practice* is entitled *Quality, health research and evidence-based practice*. This module illustrates an application of the conceptual framework proposed in Tables 6.1 and 6.2 of Chapter 6.

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