

CHAPTER 1

THE IMPORTANCE OF RESEARCH IN NURSING AND MIDWIFERY

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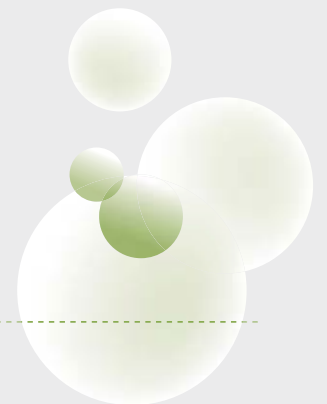
CHAPTER LEARNING OBJECTIVES

After reading this chapter you will be able to:

- recognise the importance of research and evidence-based practice in nursing and midwifery
- differentiate major philosophical approaches in the conduct of research and their use in nursing and midwifery services
- understand developments in nursing and midwifery research in the context of society, politics and history
- understand the links between nursing and midwifery services, education and research
- recognise the importance of nursing research and its contribution as part of interdisciplinary research and healthcare services.

KEY TERMS

quantitative
research
phenomenon
inductive approach
deductive approach
paradigm
theory
positivist
naturalist
model



Introduction

There are various ways by which we as human beings come to know and understand our everyday world. Over the centuries different forms of knowledge have been developed and valued by individuals and societies. As a young child we come to value the knowledge of our parents. We go to them for information and for guidance. As we move into our teens we begin to question what they know and start to seek out our own way of understanding our world and what is important to us. At high school and university we enrol in different subjects to acquire particular forms of knowledge for our future career pathway such as nursing, teaching, architecture or psychology. Within your nursing program you study different subject areas to gain particular forms of knowledge: science, to understand the molecular world of the cell; biology, to learn about the workings of the human body; psychology, to understand human behaviour and the way people think and interact; and research, to learn how to determine what is the most appropriate form of knowledge or the best evidence on which to make clinical decisions, for example about aseptic technique, pain management, caring for a person with a mental illness and their family, or deciding whether breastfeeding or bottle feeding is best for a mother and her new baby.

Over the past six decades scientific knowledge and technology have expanded. The health of populations has improved significantly, with an increase in life expectancy and a reduction of morbidity and mortality from infectious diseases (Beaglehole & Bonita 2004). Changes to nursing and midwifery services, education and research have occurred in many developed and developing countries such as the USA, UK, Australia, New Zealand, Thailand, Indonesia and Malaysia.

In Australia, nurses and midwives achieved formal recognition as healthcare professionals in the early 1980s. This was the result of political, social and professional forces such as scientific discoveries, the use of technologies in medicine and public health services, the expansion of Australian universities, the increasing number of nursing and midwifery leaders with postgraduate qualifications in education, and the requirement of undergraduate education preparation for beginning nurse clinicians (Greenwood 2000). Nursing and midwifery education is now located in the tertiary education sector. Knowledge of the practice of nursing and midwifery has expanded as the professions have become increasingly cognisant of the need for clinical practice to be underpinned by research. Clinical practice informed by research is increasingly demanded by the general public, who expect practising nurses and midwives to provide care that is evidence-based (International Council of Nurses 2006; Nursing and Midwifery Board of Australia 2010).

The professions of nursing and midwifery will experience ongoing changes in response to an increasingly ageing population, rising healthcare costs and the use of technology in the healthcare sector. The shift towards empowering health consumers to be active participants in managing their health, and the increasing expectation of the consumer to self-manage, challenges nurses and midwives to be responsive and adaptable to these trends.

In this chapter, the importance of nursing and midwifery research and evidence-based practice is emphasised. The identification of existing and emerging challenges in nursing and midwifery are discussed from the perspectives of two major philosophical approaches, positivism and naturalism. Both approaches will be described in the context of nursing and midwifery research. The future of research in nursing and midwifery

and of evidence-based practice will be presented in the context of ongoing changes in Australian social, political and professional environments.

The place of research in generating knowledge

Let us reflect on how health knowledge has been generated in traditional societies. People observed that certain behaviours would have certain outcomes. Women who were carers would encourage sick people to rest and drink plenty of fluid because they saw that the recovery process was faster when the sick attempted to do something rather than do nothing. The use of trial and error as an approach to problem-solving was the most common means of identifying what worked and what did not. Communities and individuals depended on cultural beliefs, social customs, traditional healers and acknowledged experts as the main sources of knowledge for decisions about health and quality of life. Over time, trial and error has been replaced with a more effective way of generating knowledge and applying it systematically.

As nurses and midwives, we have improved our practices as new knowledge of what is more effective has become available through research and questioning the relevance of convention, custom and tradition, through the opinion of experts, through observations and through the experience of trial and error in contemporary healthcare delivery (Burns & Grove 2009). Examples are early ambulation among post-operative patients, and the use of pets in providing emotional support for residents in long-term care. Planned investigations help consumers of research—nurses, midwives, researchers and educators—to apply research results to their work environment. The result has been improved practice.

We all use research results in one form or another. For example, clinical guidelines based on the synthesis of research results are used in our daily working life. We care for patients and their families who vary in their knowledge of their illness and their ability to manage it. As health professionals it is our business to ensure that our patients have the most up-to-date and appropriate knowledge with which to make informed decisions about their care and management. To be effective in improving health outcomes for patients and their families, we need knowledge that is evidence-based. As nurses and midwives, we also need to be competent in evaluating the strengths and weaknesses of research studies, and the applicability of their findings to our work environment.

The importance of evidence-based nursing and midwifery practices

As mentioned earlier, health professionals such as nurses and midwives use different sources of information for the delivery of services. In the 1960s Archie Cochrane found that much of clinical practice in health services lacked evidence of effectiveness, resulting in wastage of healthcare resources and sub-optimal outcomes. Cochrane was a strong advocate of randomised controlled trials (RCTs) (Cochrane 1972; Cochrane Collaboration 2010). In 1976 the first systematic review of controlled trials in perinatal medicine commenced in the UK. The Cochrane Centre opened in Oxford in 1992 with registration of the Pregnancy and Childbirth Group and its Subfertility Group. In 1993 at a conference in New York, the concept of the Cochrane Collaboration was presented by the New York Academy of Sciences. Since that time there has been rapid and extensive adoption of the concept. By August 2013 there were more than

5600 completed Cochrane reviews and 2300 protocols (see the approach used for this research in Chapter 15), which are available to healthcare workers and consumers.

Sackett and his colleagues (1996), pioneers of the Cochrane Collaboration and the Centre for Review and Dissemination, defined evidence-based medicine as ‘a conscientious, explicit and judicious use of current best evidence in the decision-making about the care of individual patients’ (p. 2). In 2000, the definition was expanded further to include patient values and clinical expertise. The evidence needs to be generated by systematic investigation. Patients’ illness condition, rights and preferences are considered when making clinical decisions about their treatment. Clinicians use their personal expertise and the best available evidence in the delivery of care. The definition of evidence-based medicine is also applied to evidence-based nursing (EBN) and midwifery (EBMid) (see Chapters 2 and 15).

Since the early 1990s evidence-based nursing and midwifery practices have been actively promoted by York University and McMaster University (Craig & Smyth 2007). Over these two decades, there has been a growth of publications of EBN and EBMid practices by different organisations including the International Council of Nurses, the Australian Nursing and Midwifery Council, and the Joanna Briggs Institute (JBI) (see Greenwood 2000; Usher & Fitzgerald 2008). These publications are as brief as a one-page summary or as long as a comprehensive document of more than 40 pages. The length and format of these publications accommodate the needs of consumers who may wish to access such evidence.



TIPS AND SKILLS

Antiretroviral treatment (ART) improves the health and prolongs the lives of persons with HIV. Long-term ART treatment is crucial for the health and well-being of individuals and reducing the risk of HIV transmission. The World Health Organization recommends that the ART treatment needs to be initiated in hospitals with maintenance in peripheral health facilities such as community-based organisations or home-based services (WHO 2013).

Levels of evidence are classified according to the validity and reliability of research (NHMRC 2009). Comprehensive criteria used to assess the quality of **quantitative research** have been well developed (see Chapter 15). Analysis and synthesis of experimental research are considered to be level I evidence. It should be noted that the Australian National Health and Medical Research Council (NHMRC) does not allocate any level to the opinions of experts (see Table 1.1).

Table 1.1 Levels of evidence according to the type of intervention

Level	Intervention
I	A systematic review of Level II studies
II	A randomised controlled trial
III-1	A pseudo-randomised controlled trial (i.e. alternate allocation of some other method)

Quantitative research:

A systematic investigation with a rigorous and controlled design, using precise measurements and obtaining quantifiable information to answer a research question.

III-2	A comparative study with concurrent controls: <ul style="list-style-type: none"> • Non-randomised, experimental trial • Cohort study • Case-control study • Interrupted time series with a control group
III-3	A comparative study without concurrent controls: <ul style="list-style-type: none"> • Historical control study • Two or more single-arm studies • Interrupted time series without a parallel control group
IV	Case studies with either post-test or pre-test/post-test outcomes

Source: NHMRC 2009

However, Polit and Beck (2010, p. 37) have included levels V, VI and VII:

- Level V: Systematic review of descriptive, qualitative or physiologic studies
- Level VI: Single descriptive, qualitative or physiological study
- Level VII: Opinions of authorities or expert committees.

Compared to quantitative research, qualitative research has been classified at levels V and VI evidence, based on qualitative evaluation of reliability and validity. Currently the Cochrane Qualitative Research Methods Group is calling for researchers to register their evaluation evidence from the perspective of qualitative research. Resources for conducting qualitative syntheses are also made available by various organisations through the Cochrane Collaboration website (2013).

The purposes of research

What is research? We do research because we are curious and interested in solving problems. ‘Research is a systematic investigation which aims to discover new knowledge or to validate and refine existing knowledge’ (Burns & Grove 2009, p. 2). The professions of nursing and midwifery are committed to generating new knowledge that informs their practice and validates best practice for healthcare delivery.

Nurses and midwives are in a good position to generate research questions because they provide direct and continuous care to individuals, families and communities. New knowledge can be generated through our observations. For example, a nurse in Sydney was the first to observe an increase in congenital malformations in newborn children of mothers who had been treated with thalidomide during pregnancy. Subsequent investigations confirmed that this was a worldwide **phenomenon** (McBride 1962; Smithells & Newman 2009).

Nursing and midwifery care vary across a broad range of contexts from health promotion, illness prevention, acute and chronic care settings and school health, to terminally ill persons who are receiving palliative care at home or in a hospice. Our clients can also be a community, such as people in rural and remote areas or disadvantaged people.

Like other professionals, nurses and midwives need to be aware of new knowledge about emerging trends and innovations in healthcare delivery that are informed by research. It is quite common to find a single issue investigated by many researchers. Of these, few projects may have findings that corroborate each other, while the findings of

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Phenomenon: Any observable thing or occurrence that is worth noting; plural, phenomena.

Sample only

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other projects may contradict each other. The question that needs to be asked is, which study gives the most credible findings and provides the best outcomes that we can use? The process used to critically analyse a large number of research studies concerned with exploring the same issue is called a systematic review (Cochrane Collaboration 2010; Craig & Smyth 2007; see Chapter 15).

Knowledge development is an ongoing process. It occurs in response to a continual advance in technology and the changing healthcare needs of clients and society. As part of a multidisciplinary healthcare team, it is important to be aware that knowledge in nursing and midwifery can be improved or confirmed through the synthesis of knowledge from research into other health disciplines.



• THINKING DEEPLY

Patient information

Nurses observe that a few post-operative patients require pain relief medication more than other patients. They start talking to patients in order to understand why. One possibility is patients' fear of surgery and the post-operative situation. The nurses know that fear can be reduced by providing patients and their family with knowledge about the operation and what is to be expected post-operatively.

To investigate the problem, two approaches to research can be used: quantitative research and qualitative research. The choice of approach depends on the philosophical orientation of the nurses and the question to be answered. Aspects of both approaches are often used to explore the same problem. Qualitative research is based on enquiry into human quality of life and human action and therefore should consider all circumstances in which that quality of life and action of the individual and family occur. What is important is researcher commitment to explore these phenomena (Law 2007; Rée & Urmson 2004). Open-ended questions (qualitative) provide an opportunity to explore a broad sweep of questions such as, what does it mean to care for another who is in pain? The knowledge generated from such a study can provide information that can be tested by quantitative research strategies. Both approaches are legitimate means by which new knowledge can be generated (Law 2007; Thompson 2003).

Quantitative and qualitative research have arisen from worldviews on how knowledge can be generated. Characteristics of both research methods are summarised in Table 1.2. The philosophical approach of quantitative research is that knowledge is good, that it accumulates through time and that it builds on previous knowledge. If the knowledge is true, it needs to stand the scrutiny of time or be tested in different environments and groups of people. An event cannot occur without preceding events, so it has to occur as the result of previous events. A particular event needs to be precisely observed or measured without any interference from other events. The hypotheses about the occurrence of an event can be tested in different environments and different groups of people. Hypotheses can never be proved absolutely because no event in the world can be proved, since there could be alternative hypotheses not considered (Susser 1986).

• THINKING DEEPLY

Systematic research

People in European countries always see white swans. It would be incorrect to state that 'All swans are white' as there are black swans in Australia. A better way to make such a statement is, 'Not all swans are white' and test this statement in different locations. Researchers or testers can falsify their statement and have more and more confidence that a swan is likely to be white. When they come across a black swan, then the statement is accepted as true.

This indicates that researchers are unable to check an event that occurs all over the world. The best they can propose is to 'falsify' that the event is not true.

You can apply this situation to many health issues. For example, we may assume that patients with terminal illness may want to know the prognosis so they can plan their life or activities. This may not be true in certain cultures as there may be a cultural belief that the psychological health of patients with terminal illness should be maintained by not letting them know about imminent death. This knowledge will not be confirmed if no systematic investigations or research are conducted among different cultural groups.

Implications for evidence-based practice

QUANTITATIVE RESEARCH—THE CONCEPT

Based on observations described in Thinking deeply on p. 8, a team of nurses plan to assess the influence of fear and social support on some patients' perceived pain so that their care can be improved. If they can provide evidence that fear has more impact on the level of pain than social support, interventions can be made in order to reduce fear before the operation. If social support has more impact, supporters of patients may need to be included in the pre-operative care so that their support can be enhanced, potentially reducing the patients' pain. The literature provides information that fear, social support and pain can be investigated and measured. Based on the team's philosophical approach, quantitative research is likely to be used.

The use of quantitative research to explore human behaviours has been criticised because it includes phenomena that have been predetermined by researchers and separated from their overall context, and because the control applied in quantitative research does not allow the voice of participants to be heard. Nurse and midwife researchers who want to focus on human experience and ways by which humans come to understand and interpret their everyday world therefore prefer a qualitative research approach to enquiry. Qualitative research generates information that produces understanding of the human condition in all its manifestations.

More than 40 terms are used to explain qualitative research. Among them are research frameworks or designs (ethnography, phenomenology, grounded theory), theoretical

perspectives (naturalist, constructivist, humanistic) and methods (interviewing, observation, document analyses) (Goodrick 2010). Chapter 6 discusses various qualitative research designs and theoretical perspectives. Readers are advised to seek detailed information from advanced qualitative research textbooks.

The foundation of qualitative research is the philosophical stance that reality is constructed by individuals as part of their everyday experience of living. Lincoln and Guba (1985) support such a notion by suggesting that a constructed reality ‘fosters the idea that there are multiple realities...and [therefore] there is more than one way to know something and that knowledge is context bound’ (Streubert & Carpenter 1995, p. 9). In the context of research, ‘ideas and knowledge belong to participants (agents) rather than the researcher (spectator)’ (Flew 1971, p. 258). The characteristics of qualitative research as shown in Table 1.2 reflect the nature of the research paradigm.

Note that the term ‘naturalistic’ has a range of meanings. It may mean that data collection is conducted in a natural setting where participants feel comfortable about providing information on their experiences devoid of any control by the researcher. It is holistic in that the context of the experience is captured. The results of qualitative studies can generate hypotheses that can form the basis of both qualitative and quantitative studies.

Implications for evidence-based practice

QUALITATIVE RESEARCH—THE CONCEPT

Based on the scenario in Thinking deeply, the team of nurses discuss the problem and find out that their patients are from several social and demographic backgrounds. Their responses to pain also vary. Long-term illness and previous use of analgesics appear to affect patients’ perceived level of pain. The team concludes that the experience of pain from the perspectives of their patients needs to be explored. They expect that the results of their research will help to provide care that meets the needs of an individual patient.

Table 1.2 Major characteristics of qualitative and quantitative research

Characteristic	Qualitative research	Quantitative research
Philosophical approaches to knowledge development	Naturalistic, interpretive, humanistic, metaphysical	Logical positivism
Focus	Broad, subjective, holistic	Concise, objective, reductionist
Reasoning	Dialectic, inductive	Logistical, deductive
Basis of knowing	Meaning, discovery, understanding	Cause-and-effect relationship
Theoretical orientation	Generates theory	Tests theory
Researcher involvement	Shared interpretation, subjective	Control, objective
Methods of measurement	Unstructured	Structured

Data	Words	Numbers
Analysis	Interpretive	Statistical analysis
Findings	Understanding of phenomena	Generalisation

Source: Adapted from Burns & Grove 1997

Inductive and deductive reasoning in research

Inductive and **deductive** reasoning are applied in human reason and enquiry (Thompson 2003). Inductive reasoning works from ‘a set of specific facts to a general conclusion. Specific phenomena are observed and a general statement is later formed’ (Burns & Grove 1997, p. 6). Inductive reasoning is applied in qualitative research.

In contrast, deductive reasoning begins from a general premise with logical consequence to a specific conclusion. If the premise is false, generally the conclusion is also false. Deductive reasoning is used in quantitative research. The hypothesis testing and probability used in quantitative research have been developed from the argument that true understanding can be achieved by testing whether a premise is false. If the premise can be tested and is shown to be not false, it remains as probable but is never confirmed. Therefore, it is more accurate to use deductive reasoning to observe the falsifiability of a premise (Susser 1986). Table 1.3 gives a schematic representation of differences between inductive and deductive reasoning.

Inductive approach:

The method of moving from the specific to the general: from empirical data to theory generation.

Deductive approach:

A method of moving from the general to the specific: from the macro to the micro.

Table 1.3 Examples of inductive and deductive reasoning

	Inductive reasoning	Deductive reasoning
Characteristic	From specific to general	From general to specific
Example	<p>Specific: Bleeding during pregnancy is stressful to pregnant women. Having high blood sugar during pregnancy is stressful to pregnant women.</p> <p>General: All symptoms during pregnancy are stressful to pregnant women.</p>	<p>General: All humans are mortal.</p> <p>Specific: John and Mary are human. Therefore, John and Mary are mortal.</p>

The hypothesis to be tested in quantitative research (see Chapters 10 and 12) is stated as, ‘No relationship between two variables (null hypothesis)’. If it is proved that this null hypothesis is false, the relationship between both variables is probable. In other words, an alternative hypothesis which stated that ‘There is a relationship’ is likely to be valid, given a good study design, lack of bias, appropriate sample and adequate sample size.

Two examples of hypotheses used in quantitative research are:

- *Null hypothesis:* There is no relationship between healthcare workers’ perceived risk of infection and their hand-washing.
- *Alternative hypothesis:* There is a relationship between healthcare workers’ perceived risk of infection and their hand-washing.

Quantitative research is considered a scientific approach. Original hypotheses may result from observations, intuitions and human imagination. Observations and subsequent systematic investigations can provide information that refutes traditionally held beliefs such as stress causing peptic ulcer (Marshall & Warren 1984; Marshall et al. 1988) and shoes causing a higher prevalence of Hallux valgus in women (MacLennan 1966). Possible hypotheses may be proposed and considered so that the most likely hypothesis can be formally investigated to explain a phenomenon (Thompson 2003). Demonstrating that a hypothesis is false may lead to the generation of another hypothesis.

One requirement of the knowledge generated from scientific investigations is that it needs to be scrutinised. New knowledge may refute or support currently held knowledge. Acceptance of new knowledge by others in the profession may take years, as in the research by Marshall and Warren (1984). Traditional beliefs held by medical practitioners were that stress and acidity caused peptic ulcer. An alkali was one of the treatments. Marshall and Warren reported research results that bacteria cause peptic ulcer, which challenged standard clinical practice and greatly reduced the cost of treatment.

Paradigms for nursing and midwifery research

Paradigm: In the research context, paradigm has come to mean the commitments, beliefs and values, methods and outlooks shared across a research discipline.

Theory: A set of interrelated assumptions put forward to describe or explain a given phenomenon.

Positivist: Someone who believes in the concepts of an objective reality and the notion of determinism.

Naturalist paradigm: The exploration of phenomena as they occur in their natural setting.

Model: A structure or framework designed to symbolise a concept or phenomenon.

A **paradigm** is the thought pattern in a scientific discipline or the **theory** of knowledge (Flew 1971). Historically, knowledge was gained through observations and trial and error. An individual who accumulated knowledge or expertise on particular issues was another source. The truth of this knowledge could be tested.

Since the late 19th century, technologies and scientific enquiries have been used to improve the health of populations. This improvement was gained through scientific methods such as laboratory experiments and field trials. This theory of generating knowledge is referred to as the **positivist** paradigm (see Table 1.2) and it underpins quantitative research.

The application of a positivist approach to research, especially in the area of human behaviour, was criticised for its apparent inability to explore human experience from a holistic perspective. The limitations of the positivist paradigm to conduct research in this complex area of human existence have led to the development of another research paradigm, the '**naturalist paradigm**'.

Qualitative research methods are still evolving and need to be consolidated. However, researchers such as Kleinman (1980) and Leininger (1988), pioneers in using qualitative research in health, proposed conceptual frameworks that have been used in many nursing and midwifery research studies (Fawcett 2002).

Recently the combination of qualitative and quantitative approaches, referred to as a mixed methods approach to research, has been applied to many disciplines, including nursing and midwifery. Understanding the principles behind this approach is necessary because it is not a simple matter of combining quantitative and qualitative approaches in a study. Chapter 13 explains mixed methods research in detail.

The role of theory in nursing and midwifery research

Increasing death and illness due to chronic diseases, the increasing cost of technology in healthcare, and the shift towards a holistic view of the aetiology of illness have led to the development of **models** and theories to explain individual health and illness in families and communities. The development of such theories in nursing and midwifery has a similar history. The Nightingale theory, which emphasised cleanliness in individuals and environments (Geison 1995), was developed at a time when infectious diseases were the

leading causes of death. Poor nutrition, environment and public health infrastructure were discovered to be major contributing factors to illness and death.

The growth of current nursing theories began in the early 1980s, initially in the USA and the UK. Professionalism and nursing education at tertiary level were major factors leading to the development of nursing theories. More than 27 theories have been proposed, falling into four classes: philosophy, grand theory, middle-range nursing theory and micro theory (Marriner-Tomey 1994; Marriner-Tomey & Alligood 2006) (Table 1.4). As research and evidence-based practices grow, new knowledge is being generated. New theories such as Trans-cultural Dynamics in Nursing and Cultural Safety theory have been developed and tested, while some theories such as the Behavioural System by Johnson have been found to have limited use. Some theories such as the Cultural Care Theory and the Pender Health Promotion Model have been reviewed and revised as the result of their use in research projects. Readers who are interested in learning more about nursing theories are recommended to read other sources that focus on these matters (see Further reading).

Table 1.4 Examples of theories and research using some of these theories

Major levels of nursing and midwifery theories or models	Examples of theories or models
Philosophy of nursing	F. Nightingale, <i>Modern Nursing</i> E. Wiedenbach, <i>The Helping Art of Clinical Nursing</i> V. Henderson, <i>Definition of Nursing</i> L. Hall, <i>Core, Care and Cure Model</i> J. Watson, <i>Philosophy and Science of Caring</i> P. Benner, <i>From Novice to Expert—Excellence and Power in Clinical Nursing Practice</i>
Grand theory	D. E. Orem, <i>Self-Care Deficit Theory of Nursing</i> M. R. Rogers, <i>Unitary Human Beings</i> C. Roy, <i>Adaptation Model</i> B. Neuman, <i>System Theory</i> I. King, <i>Theory of Goal Attainment</i>
Middle-range theory	I. J. Orlando, <i>Nursing Process Theory</i> R. T. Mercer, <i>Maternal Role Attainment</i> K. E. Bernard, <i>Parent-Child Interaction Model</i> M. Leininger, <i>Cultural Care Theory</i> N. J. Pender, <i>The Health Promotion Model</i>
Micro theory	Stress-Strain-Coping Theory Pain Gate Theory

Sources: Greenwood 2000; Marriner-Tomey 1994

What is the purpose of theory for research and evidence-based practice?

In the early 1970s recognition of nursing and midwifery as health professions in North America and the UK led to changes in education, research and practice. Nurses, midwives and other health professionals clearly indicated their need to have a body of