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Measuring the quality and safety outcomes of nursing practice

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Measuring the quality and safety outcomes of nursing practice

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ABSTRACT

Background

Measuring the impact of nursing care on patient outcomes is a complex task. Nurses make up a large proportion of the healthcare workforce and interact with patients in almost every aspect of a person's healthcare experience. Despite the large volume of research that examines nursing care and patient outcomes, there has been no agreement on what should be measured and no consensus on how the broad actions of nurses should be evaluated.

The purpose of this research was to identify how nursing's contribution to patient outcomes could best be measured. The research aims were to: identify / develop a conceptual framework that describes nursing outcomes from a holistic perspective; and identify a set of indicators that could be used to measure the quality and safety of nursing practice from the perspective of the person receiving nursing care.

Methods

This research used a multi-phase, mixed methods design with three distinct phases. Phase 1 of the research used qualitative interviews and analysis of the published literature to identify the important concepts for measuring nursing practice. Phase 2 used a modified Delphi survey to gain consensus agreement from practicing nurses in Australia on the most important concepts for measuring the outcomes of nursing practice. Phase 3 used a template analysis of the published literature to identify how each of the concepts identified in Phase 2 of the research had been measured. This enabled a systematic analysis of the published literature on nursing-sensitive indicators and nursing-sensitive outcomes to be undertaken. At the end of this research a conceptual framework and indicator set for measuring the quality and safety outcomes of nursing care has been proposed.

Findings

Each phase of the research has built on findings from the previous phase. A conceptual framework has been developed that describes the important concepts that can be used to measure nursing care in a comprehensive way. There are seven elements in this conceptual framework and they are: Care and Caring; Communication; Coordination and Collaboration; Safety; Patient Characteristics; Organisational Environment: and Nurses Work Environment.

An indicator set for measuring the quality and safety outcomes of nursing care has also been proposed. This indicator set identified structure, process and outcome measures for the seven elements within the conceptual framework. Data for the indicator set can be obtained from organisational data, processes of care, safety indicators, and from three periodic surveys (Nursing Work Index – Revised; Caring Assessment Tool; and the Picker Institute Patient Experience Survey). Through collection of this data at unit level a comprehensive evaluation of nursing care and the impact it has on patient outcomes can be undertaken.

Conclusion

This research makes an original contribution to knowledge in that it has: expanded on existing knowledge of how the outcomes of nursing care can be conceptualised; and identified a method for measuring the unique contribution of nurses and nursing care to patient outcomes. The conceptual framework and indicator set developed within this research can be used to articulate and measure the contribution that nurses make to patient outcomes. The conceptual framework and indicator set enables individual nurses, units and organisations to be more accountable for the care they provide to patients. The indicator set has the potential to assist organisations to monitor and improve nursing care by measuring the quality and safety of the care that is provided to patients in a comprehensive way.

CERTIFICATION

I, Jenny Louise Sim, declare that this thesis, submitted in partial fulfilment of the requirements for the award of Doctor of Philosophy, in the School of Nursing, University of Wollongong, is wholly my own work unless otherwise referenced or acknowledged. The document has not been submitted for qualifications at any other academic institution.

Jenny Louse Sim

10th July 2015

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Within my family there are also a number of special people I need to thank. I especially thank my husband, Dave. Your love and your belief in me have always been unwavering. It makes everything seem possible (including ascending the tallest peaks). To my sisters Tracy and Karen and my brother David: thank you for always believing in me. To my mother, Valda, and my father, Robert, thank you for providing me with the skills and motivation to be independent. To my children, Jack, Daniel and Max: you have never known a mother who was not busy and trying to achieve a large number of things at once. I hope this provides a role model that helps you to understand that you can achieve anything if you set your mind to it.

DEDICATION

I dedicate this thesis to my three children: Jack, Daniel and Max. You are my inspiration and my passion. Your love, curiosity, sense of wonder and your happy spirits are the true inspiration for so many achievements and this is just one of them. I hope that you will grow up with a love of learning that enables you to shine and share your knowledge and enthusiasm with the world. Each and every one of you are truly amazing and my gift (with my husband, Dave) to humanity. I love you very much.

This thesis is also dedicated to my sister, Tracy, who during the writing up of this thesis has battled with and is now losing her fight with breast cancer. Your positivity, love of life and the humanity of your spirit will always live in side of me. You inspire me in so many ways. You will be forever loved and sorely missed.

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CHAPTER 1: INTRODUCTION

This thesis reports on research that was undertaken to identify the important concepts in evaluating nursing care and documents the development of a conceptual framework and indicator set for measuring the quality and safety outcomes of nursing care. The research uses multiple phases and mixed methods. It includes the views of people who have been nursed and the views of nurses themselves. It uses a template analysis of the published literature to identify mechanisms for measuring the important concepts related to the quality and safety outcomes of nursing care.

1.1 Background to the research

The motivation for this study arose from my own experiences as a Director of Nursing within a public hospital in New South Wales, Australia. It was my experience that in tight fiscal times, health service administrators who wanted to identify cost savings in the budget would frequently look to the nursing cost centre to try and make those savings. The most common target was nursing staff positions or the skill mix of nursing staff within departments or wards. In an attempt to provide a counter-argument to these ideas, I sought to identify data within the organisation that could assist me to convince the health service administrators that by altering the nurse staffing it would alter the quality and safety of nursing care and that this would have an impact on patient outcomes. Surprisingly, I found that no such data seemed to exist. When I examined the matter further I found that there was no real agreement or consensus about the impact of nursing care on patient outcomes and that the outcome measures that were described in the literature were often disputed as being attributable to nursing staff or nursing actions.

It became apparent that nurses themselves could not agree on how the impact of their care on patients could best be evaluated. In trying to learn more about this phenomenon, I had many discussions with nurses about how they evaluate the care they deliver to patients. These conversations highlighted that there was a high degree of subjectivity in individual nurses' approaches to evaluating the care they delivered. Nurses appeared to evaluate their care based upon their subjective opinion of what constituted good nursing

care and whether that had been achieved by the patients in their care. There was no consensus agreement on what constituted *good* nursing care.

At around this time, I became aware of a professional dialogue in Australia related to autonomy and accountability within nursing. Nurses in Australia were seeking professional self-regulation and it was proposed that the "professionalism of nursing" could be used as an argument in support of achieving that aim (Royal College of Nursing Australia 2003, p.1). One of the rationales used to support self-regulation was that each nurse is accountable for the appropriateness, quality and cost of healthcare that they provide (Royal College of Nursing Australia 2003). Despite this assertion, it was evident to me, that there was no way of measuring this accountability at an individual nurse, unit or organisation level.

The professional dialogue about autonomy and accountability within nursing was occurring alongside an increasing demand for professional and financial accountability within the healthcare sector generally. This was in large part due to the increasing costs of healthcare as a percentage of gross domestic product (GDP) (Australian Institute of Health & Welfare 2010) and the subsequent fiscal constraints applied to the public healthcare system in Australia by multiple tiers of government. Similar pressures were also occurring in most other developed countries throughout the world. This call for professional and financial accountability within healthcare resulted in nursing as a profession being asked to identify and measure the contribution that nursing care uniquely makes to patient outcomes (Doran et al. 2006a; Riehle et al. 2007). As a professional group, nurses in Australia appeared to find the requirement for gathering evidence in support of professional accountability to be challenging (Royal College of Nursing Australia 2003). This mirrored my challenges in identifying data on nursing outcomes at ward and organisation level within the hospital where I worked.

When I spent some time contemplating this problem, it became apparent that measuring nursing care is not a simple task. Nurses are involved in all aspects of patient care and separating their specific contributions to patient care is complex and difficult. It is my view that it is largely because of the complexity of the nursing task, that there has been no collective agreement within the nursing profession on what constitutes good nursing

care and no consensus or universal measure of quality nursing practice. This lack of agreement accompanies the difficulties experienced in defining nursing care and the application of definitions of nursing into practice settings (Crookes 2009; Anonymous 2003; Heath & Phair 2000; Henderson 1978; Bendall 1976).

At about this time I was introduced to the concept of nursing-sensitive patient outcomes by Professor Patrick Crookes. This term was not part of the language used in nursing practice settings in Australia at this time. Put simply, nursing-sensitive outcomes represent the consequences or the effects of the actions of nurses and can be seen in changes in, or maintenance of, the patient's health related state (Doran 2003). However, in order to measure the outcome of nursing work, it is also necessary to define nursing actions. Again, this is not an easy task. McCloskey and Bulechek (2000) provide a commonly cited definition of a nursing intervention. They describe it as, "any treatment based upon clinical judgement and knowledge that a nurse performs to enhance a patient / client outcome" (McCloskey & Bulechek 2000, p.xix).

These definitions formed the basis for my initial understanding on the topic. It is important to recognise that these definitions make explicit the requirement to link nursing actions with outcome measures that assess the impact of nursing work on patient outcomes. This made sense to me and resonated with my desire to be able to identify the impact that nurses have on patient outcomes and be able to communicate that to patients, nurses, members of the healthcare team and health service administrators.

1.2 Research purpose and aims

The purpose of this research was to contribute knowledge to an identified gap in the literature and in clinical practice. This research expanded on existing knowledge of how the outcomes of nursing care can be conceptualised and identified a method for measuring the unique contribution of nurses and nursing care to patient outcomes.

The research aims were to:

- identify / develop a conceptual framework that describes nursing outcomes from a holistic perspective;
- identify a set of indicators that could be used to measure the quality and safety of nursing practice from the perspective of the person receiving nursing care.

1.3 Research questions

To achieve these aims the following overarching research question was developed:
How can nursing's unique contribution to patient outcomes be measured?

In an attempt to answer this broad question the following set of research questions were proposed:

1) what are the key elements of quality nursing care from the perspective of patients / consumers?
2) what nursing-sensitive outcomes are currently being used in Australia to measure the outcomes of nursing practice?
3) what conceptual frameworks are used to guide the measurement of nursing-sensitive outcomes in research and practice?
4) what concepts should be considered when measuring the outcomes of nursing practice?
5) what are the most important concepts to practicing nurses, when measuring the outcomes of nursing practice?
6) how can the important concepts related to measuring the outcomes of nursing practice be conceptualised?
7) what indicators (and measurement methods) are the most effective for measuring nursing practice?
8) what set of indicators would be the most effective for measuring the quality and safety of nursing practice in a holistic and comprehensive way?

The research questions build on each other and have been used to guide the study design, data collection and data analysis throughout the multiple phases of the research project.

1.4 Rationale and significance of the research

Measuring the contribution of nurses (and nursing care) to patient outcomes is important. The nursing workforce makes up a significant percentage (27%) of the healthcare expenditure and accounts for over 11 billion dollars each year in expenditure within public hospitals in Australia (Australian Institute of Health & Welfare 2012). Given the significant role nurses play and the cost of nurses to the healthcare system it is vitally important that nurses can articulate and measure the contribution they make to patient outcomes. Measuring the outcomes of nursing care enables nurses to become accountable for the care they deliver. It also enables organisations to improve nursing care by measuring the quality and safety of care provided to patients. This is important for improving patient outcomes.

This research is also important for the nursing profession. Nelson and Gordon (2006) discuss the unintended consequences of the way nurses think about, talk about and structure their work. They argue that most of the rhetoric about nurses and nursing work is focused upon caring and the "*virtues*" of nurses rather than the "*knowledge*" of nurses (Nelson & Gordon 2006, p.26). As a result of this the public sees nursing as "good work performed by kind and nice people (women), as opposed to skilled and intelligent work" (Nelson & Gordon 2006, p.14). It is my position that nurses and the nursing profession need to be able to evaluate their practice in a holistic way before they acquire the data and the language to be able to convince themselves and others about the knowledge of nursing.

The ability to evaluate nursing practice would have benefit to the nursing profession by providing evidence to nurses about their role as agents of therapy. This may lead to an end to *oppressed group behaviour* because if nurses had a better understanding of the importance and value of the work they do, they would be less likely to act in the ways they often do (Roberts 1983). Evaluating nursing practice would also have the benefit of providing data to economic rationalists who approach nursing as a budget item rather than a profession that uses their knowledge, clinical skills and judgement to keep patients safe in an increasingly complex healthcare system.

1.5 Organisation of the thesis

The thesis is presented in seven chapters. This chapter has provided an overview of the research which included the motivation for the study, the purpose, aims and research questions. It also outlines the manner in which the thesis has been structured.

Chapter two presents a comprehensive review of the literature as background to the project which, due to its length, has been divided into three sections. Section one broadly examines the concept of patient outcomes and the theoretical approaches to measuring patient outcomes. Section two provides a historical overview of the development of nursing-sensitive outcome measures. Section three explores the contemporary research on measuring nursing-sensitive patient outcomes.

Chapter three presents and explores the methodology used within this research. It includes a comprehensive discussion of the ontological, epistemological and methodological approaches that have framed the development of the multi-phase, mixed methods approach used to answer the research questions proposed within this research.

In chapter four, the research design and findings from Phase 1 of the project are described. This includes the identification of concepts for measuring the quality and safety outcomes of nursing care. These concepts are used as the starting point for Phase 2 of the research project.

Chapter five presents the research design and findings from Phase 2 of the project. This includes the identification of the most important concepts for measuring the quality and safety of nursing care and includes the development of a conceptual framework for measuring the quality and safety outcomes of nursing practice.

Chapter six describes the research design and findings from Phase 3 of the project. This includes a template analysis of the published literature to analyse the concepts used to measure nursing practice and the methods used to examine those concepts. This analysis has enabled an indicator set to be developed.

Chapter seven presents the discussion and the conclusion. This includes discussion and synthesis of the findings from the three phases of the research with a specific focus on the outputs of this research: a conceptual framework for measuring the quality and safety outcomes of nursing care; and an indicator set for measuring the quality and safety outcomes of nursing care. The chapter includes a conclusion to the project which provides an overview of the research and discussion of the significance and limitations of the research undertaken. Suggestions for future research are then presented.

CHAPTER 2: REVIEW OF LITERATURE

2.1 Introduction

The measurement of nursing care is not a simple task despite the fact that nursing is one of the core activities of healthcare services (Needleman 2008). Nursing is complex. It is not easy to define and it is not easy to separate from the broader hospital or healthcare experience. While there is a large volume of literature that identifies and attempts to measure nursing care, there have been very few studies that evaluate the impact of nursing care on patient outcomes from a holistic perspective. This review focuses on existing methods for measuring the impact that nurses and nursing care have on patient outcomes.

This review of literature is in three main parts. The first part of the literature review broadly examines the concept of patient outcomes and the theoretical approaches to measuring patient outcomes. The purpose of this section is to provide an overview of patient outcomes and explore the conceptual models most commonly used to examine outcomes within healthcare and nursing more specifically. It describes Donabedian's (1966) pioneering work to evaluate quality of care using structure, process and outcome measures. It also identifies a number of conceptual models that have been used to describe nursing work and how nursing practice can be evaluated. This part of the literature review concludes with a discussion of nursing work and the contributions nursing care and nurses make to patient outcomes.

The second part of the literature review describes the history of the development of nursing outcome measures by examining the scholarly approaches that have been used to build the body of knowledge on nursing-sensitive outcomes. The purpose of this section is to describe the major research initiatives undertaken on nursing-sensitive outcomes with the aim of learning from the development of knowledge in this field. It includes an overview of the major initiatives used to measure nursing outcomes and how these initiatives have impacted on the understanding and use of nursing-sensitive indicators and nursing-sensitive outcomes in both research and practice. This part of the literature review does not attempt to describe all research conducted on nursing-

sensitive performance measures. It provides a synopsis of the major research endeavours. This approach enables a discussion to be presented on the evolution of research on this topic and the implications this has had for ongoing research and conceptual understandings related to the topic.

The third part of the review of literature narrows the focus of this review to explore the contemporary research on measuring nursing-sensitive *patient outcomes*. The purpose of this section of the literature review is to establish the context for ongoing research that examines nursing-sensitive patient outcomes. It uses integrative review methods to evaluate the impact nursing care has on patient outcomes. It also examines how conceptual frameworks have been used within research on nursing-sensitive outcomes and explores the methodological approaches that have been used within this body of work. This approach enabled all research on the topic to be examined and facilitates an understanding of the entire body of literature. It facilitates the development of knowledge on the important concepts that could be used to measure nursing's contribution to patient outcomes.

Key findings from this review of the literature form the basis for the further investigation of how nursing's contribution to patient outcomes could best be measured.

2.2 Search strategy

A number of sources were used to search the scholarly literature about how the impact of nursing care on patient outcomes has been measured or evaluated. Empirical work in this area was accessed through databases relevant to health, behavioural and social sciences. An extensive search in the databases: Medline, CINAHL, ProQuest Central and Science Direct, for published papers up to July 2011 was conducted. The search for journal articles within these databases was limited to publications within scholarly journals and in the English language. No restrictions were set based upon the research methods used in the papers. Quantitative, qualitative, review and narrative discussion papers were all included. A large amount of duplication was evident in the results of these searches.

The grey literature was also explored in a number of ways. Official websites of government and professional nursing bodies in Australia, the United States of America and the United Kingdom were accessed for reports containing patient outcome data related to nursing. These included the official websites of the Australian Commission on Safety and Quality in Healthcare (ACSQHC, Australia), Clinical Excellence Commission (CEC, New South Wales, Australia), Agency for Healthcare Research and Quality (AHRQ, USA), American Nurses Association (ANA, USA), and the Royal College of Nursing (RCN, United Kingdom). The database of the Australian Digital Theses (ADT) was also accessed to locate any relevant dissertations which may have been published in a similar field.

A wide range of keywords were used to search for the pertinent literature within the previously mentioned data sources. The main search terms included: “nurs* sensitive outcome*”, “nurs* outcome*”, “patient outcomes”, “nurs* sensitive indicator*”, “nurs* indicator*”, “nurs*”, “quality”, “evaluation”, “measurement” and “research”. Some of these terms were used in isolation but many were combined.

In addition to journal articles, grey literature and dissertations, a range of books were also reviewed. These were either introduced by research supervisors, through discussion with colleagues or accessed through a further search using relevant keywords within the library catalogue, interlibrary loans, and Google Scholar search engine. References that were considered appropriate to the topic from reference lists and texts were also reviewed.

The inclusion criteria included articles that examined the impact of nurses and nursing care on patient outcomes. Articles that did not examine patient outcomes were excluded from this review of literature. This excluded a large body of research that examined the impact of nurses and nursing care on nursing outcomes and / or organisational outcomes. A deliberate choice was made to explicitly focus on patient outcomes within this review of literature and in the research more broadly. The primary reason for doing this was the strong belief that patients are at the centre of all nursing care and that if we are to measure nursing care, then the impact that nursing care has on patients should be

the subject of these research endeavours. The secondary reason was to provide a focus to the research and ensure that the project remained manageable.

Part 1: The concept of patient outcomes and theoretical approaches to measuring patient outcomes

The purpose of this section is to provide an overview of patient outcomes and explore the conceptual models most commonly used to examine outcomes within healthcare and nursing more specifically. The discussion begins with a definition of patient outcomes and a discussion of Donabedian's (1966) pioneering work to evaluate quality of care using structure, process and outcome measures. A number of conceptual models that have been used to describe nursing work are presented. This part of the literature review concludes with a discussion of nursing work and the contributions nursing care and nurses make to patient outcomes.

2.3 Patient outcomes

Patient outcomes were defined by Donabedian (1980) as a change in a patient's current and future health status that are attributable to antecedent care and research in this area began in the 1980s. Jennings (1991) identified that a focus on healthcare economics prompted the development and use of research into patient outcomes during this time. In the earliest stages of their development patient outcomes were primarily focused on measuring the impact of medical care. It was not until the early 1990s that nurses began to identify and examine patient outcomes that related to nursing care.

2.3.1 Donabedian's structure, process and outcome framework

Avedis Donabedian published his seminal work on measuring the quality of healthcare in 1966. He described three categories for measuring the quality of care (Donabedian 1980). The three categories are structure, process and outcome. Structure relates to the attributes of the settings in which the care occurred (Donabedian 1988). It includes the characteristics of the organisation, the physical setting and characteristics of the staff. Process relates to what actually occurred in giving and receiving care (Donabedian 1988). It includes the actions of the patient or client as well as the actions of the healthcare team members in delivering care. Outcome relates to the changes that are

observed in a patient or client's health condition that result from the care that has been provided to them (Donabedian 1988). It thus includes changes in patient knowledge, self-care ability, the relief or management of symptoms, changes in health condition and patient satisfaction with care.

Donabedian (1988, p.1745) states that, "this three-part approach to quality assessment is possible only because good structure increases the likelihood of good process, and good process increases the likelihood of a good outcome." This framework by Donabedian (1966) has guided quality research ever since it was published and it has been adapted and used in a wide variety of healthcare contexts.

One of the earliest examples of the use of Donabedian's structure, process and outcome framework within healthcare research is the *Medical Outcomes Study* which was published by Tarlov and colleagues (1989). This mixed method study was conducted as a two year observational research project and included cross-sectional and longitudinal arms (Tarlov et al. 1989). The study used Donabedian's structure, process and outcome model to delineate patient outcomes associated with medical practice. The conceptual framework used to guide the study design has been reproduced in Figure 2.1. The authors of the Medical Outcomes Study explicitly examined structural characteristics, processes of care and a wide variety of outcome measures (which included assessment of disease-specific clinical endpoints of care and generic measures of functional status, well-being and satisfaction with care as reported by patients) (Tarlov et al. 1989). It was hypothesised by the researchers that a more comprehensive perspective on assessing outcomes would increase the likelihood of detecting changes to patients related to the structure of the healthcare system and / or the process of care (Tarlov et al. 1989).

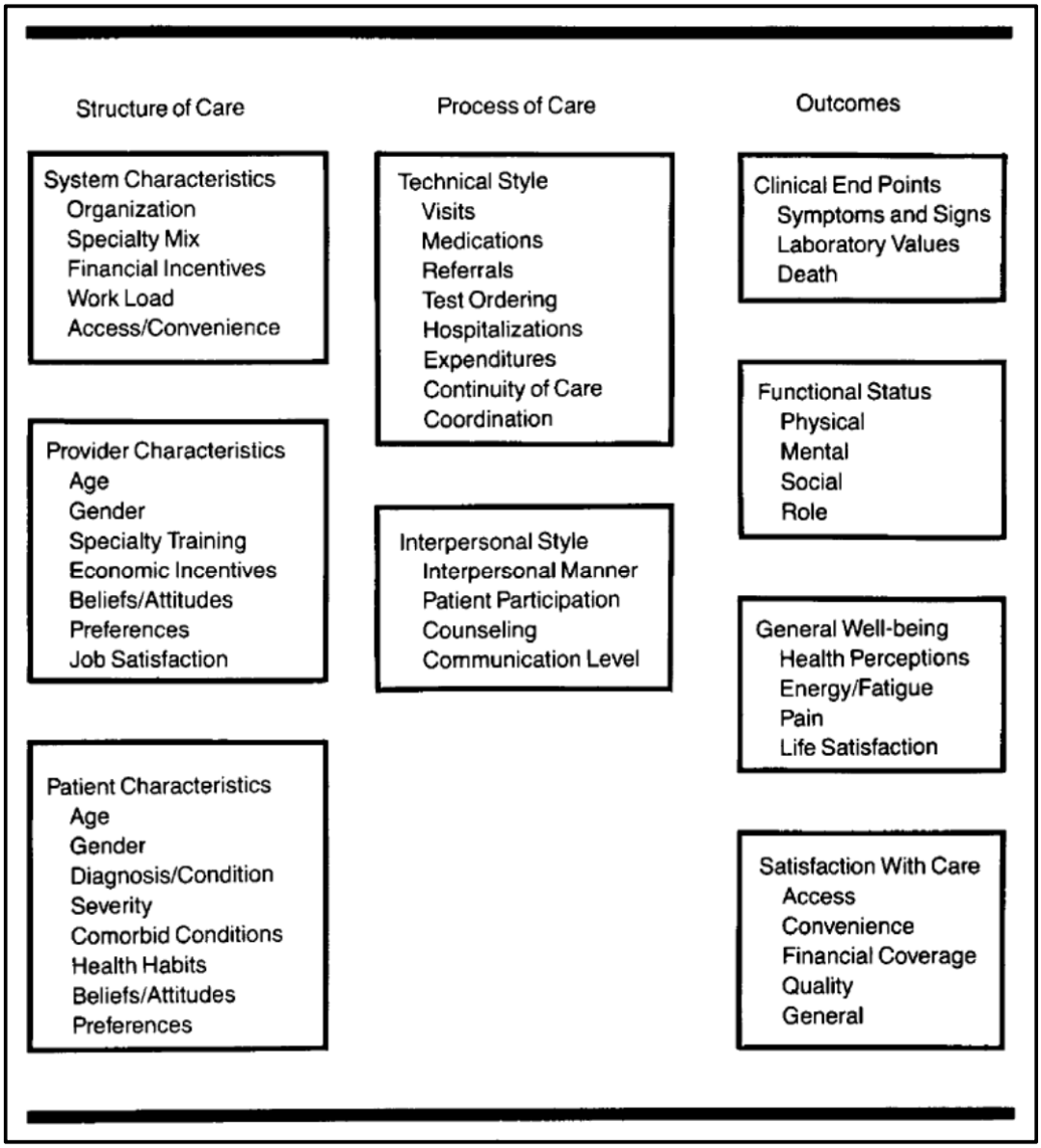

Figure 2.1: The Medical Outcomes Study conceptual framework (Tarlov et al. 1989, p.926)

The Medical Outcomes Study is a good example of adherence to Donabedian's theory: that examining quality of care within a whole framework that examines structure, process and outcome elements will result in a more accurate and holistic assessment of that care (Donabedian 1980; Qu et al. 2010). The collection of structure and process measures enables an organisation to evaluate and diagnose positive and negative performance as it relates to the outcome measures that have been studied.

At around the same time that the Medical Outcomes Study was published, Lohr described five categories by which medical care could reasonably be evaluated (Lohr 1988). These five categories of outcomes have been described as the *5 D's*: death, disease, disability, discomfort and dissatisfaction (Mitchell, Ferketich & Jennings 1998; Oermann & Huber 1999). Examples of this are mortality and morbidity following a procedure, and satisfaction with pain management procedures. Outcome measures like these have dominated the literature and mortality and morbidity are often seen (even today) as the most significant patient outcome measures.

The focus on morbidity and mortality is evident in the report *To Err is Human: Building a Safer Health System* that was released in 1999 in the USA (Kohn, Corrigan & Donaldson 2000). This report received a significant amount of attention in the popular press and in academic circles. The headline information in the popular press involved the extrapolation of data about the incidence of adverse events identified in two landmark studies: in New York (Brennan et al. 1991) and in Colorado and Utah (Thomas et al. 2000). The adverse event data from these two studies indicated that when extrapolated to the over 33.6 million admissions to USA hospitals in 1997, at least 44,000 and perhaps as many as 98,000 Americans would die in hospitals each year as a result of medical errors (Kohn, Corrigan & Donaldson 2000). This made medical errors the eighth leading cause of death in the USA and resulted in headlines such as "*Medical Mistakes 8th top killer*" (Davis & Appleby 1999; Wakefield & Maddox 2000). Since publication of the report, *To Err is Human: Building a Safer Health System,* significant changes have occurred in how healthcare is organised and funded within the USA. One of the most significant examples of this is that if a patient experiences a preventable adverse event, hospitals are no longer funded for the cost of treatment of that event by Medicare (Pear 2007). It would appear that this focus on safety and the subsequent changes in funding of health services have had a significant impact on the focus of research on patient outcomes. This will be explored further within part three of this review of literature.

Following publication of the Medical Outcomes Study, a number of nursing researchers began to write about how nursing outcomes could be measured. Two specific conceptual frameworks were developed that used Donabedian's structure, process and

outcome framework as their guiding foundation. Each of these frameworks were conceptualised based upon the principles identified by Donabedian and added an explicit focus on measuring nursing's contribution to patient outcomes. These frameworks are the Quality Health Outcomes Model developed by Mitchell, Ferketich and Jennings (1998) and the Nursing Role Effectiveness Model developed by Irvine and Sidani (1998).

2.3.2 The Quality Health Outcomes Model

The Quality Health Outcomes Model was published by Mitchell and colleagues in 1998. It was developed to build on Donabedian's structure, process and outcome model for the purpose of guiding quality of care evaluation and research within nursing (Mitchell, Ferketich & Jennings 1998). It recognises that the relationship between, structure, process and outcomes is not always linear and uses multiple feedback loops between concepts to recognise the inter-relatedness of the elements being studied. A visual representation of the model is presented in Figure 2.2.

In the Quality Health Outcomes Model, the system characteristics include: structure and process elements as they relate to the organisation; the interventions are the clinical processes; and client characteristics are the individual characteristics of patients that could be classified as either structure or process elements (Mitchell, Ferketich & Jennings 1998). Outcomes are conceptualised as the results of care structures and processes that integrate functional, social, psychological, physical and physiologic aspects of peoples' experiences following nursing care (Mitchell, Ferketich & Jennings 1998). Mitchell, Ferketich and Jennings further categorise outcomes into the following: "achievement of appropriate self-care; demonstration of health-promoting behaviours; health-related quality of life; perception of being well-cared for; and symptom management" (Mitchell, Ferketich & Jennings 1998, p. 45).

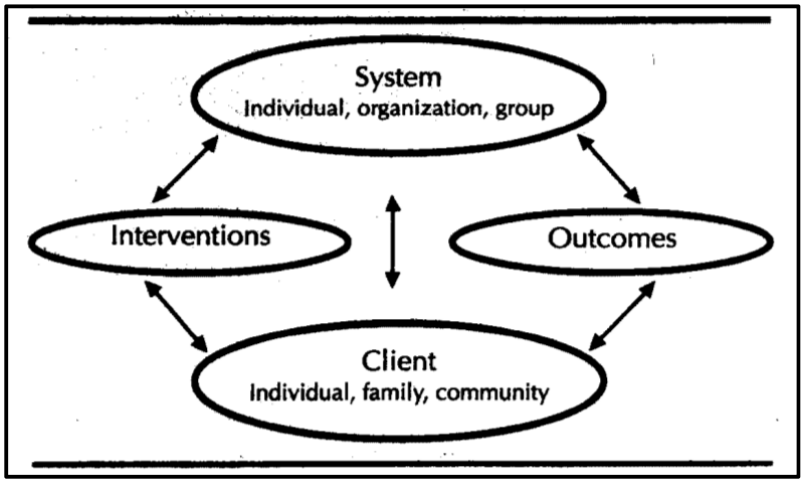

Figure 2.2: The Quality Health Outcomes Model (Mitchell, Ferketich & Jennings 1998, p.44).

At around the same time that the Quality Health Outcomes model was published, another model called the Nursing Role Effectiveness Model was published. This model recognises the complexity of measuring outcomes in healthcare but is more explicitly focused on the outcomes of nursing care.

2.3.3 The Nursing Role Effectiveness Model

The Nursing Role Effectiveness Model (NREM), illustrated in Figure 2.3, was first described by Irvine and Sidani (1998). It has been further described by Doran (nee Irvine) and colleagues in 2002 and 2006 (Doran et al. 2002; Doran et al. 2006b).

The basic premise of the NREM is that the nursing contribution to patient outcomes is in part independent and unique, but is also, at other times dependent on others (for example, via the enacting of ‘doctors orders’), and/or interdependent on the entire healthcare team involved in the delivery of healthcare services. The NREM attempts to conceptualise the components of the nursing role that can be accurately and reliably measured and attributed to the role of the nurse using Donabedian’s structure, process and outcome model.

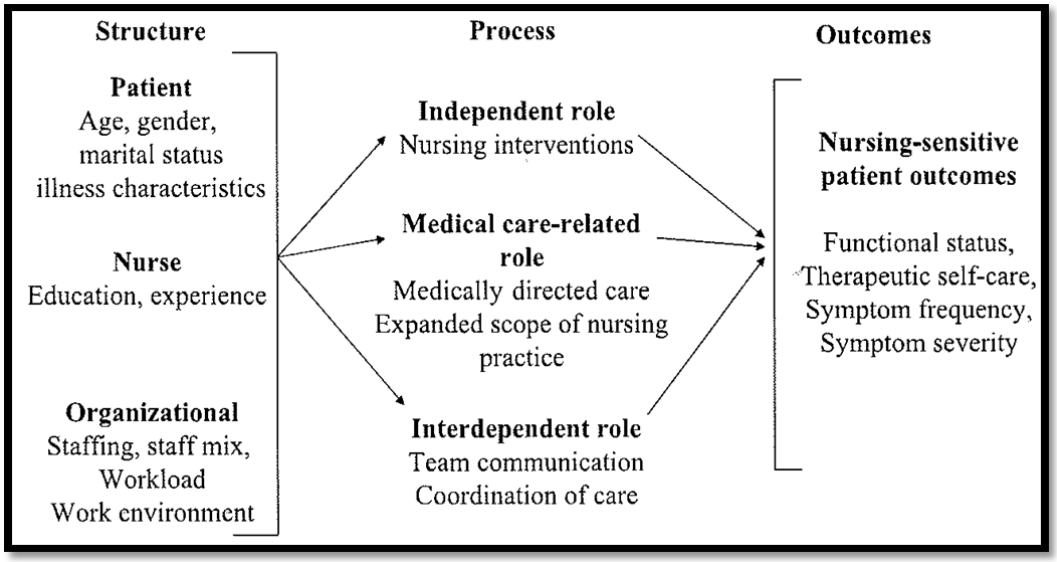

Figure 2.3: The Nursing Role Effectiveness Model (Doran et al. 2006b, p.S76).

The structure component of the NREM consists of nursing, patient and nurse unit variables that influence the processes and outcomes of nursing care (Doran et al. 2002). The process component consists of the independent, dependent and interdependent functions of nurses. The independent role concerns the actions of nurses for which they are held solely accountable; for example, patient assessment, decision making regarding implementation and evaluation of nursing care, education and follow up (Doran et al. 2002). The dependent role consists of clinical judgements and activities that relate to implementing medical instructions and decisions of other team members; and the interdependent role consists of role functions and responsibilities that nurses share with other members of the healthcare team (Doran et al. 2002). This interdependent role is conceptually evident in the research of Duffield et al. (2007) when they refer to nursing as the glue that holds the healthcare system together. The patient outcome measures identified within the NREM have been categorised into measures that examine functional status, therapeutic self-care, symptom frequency and symptom severity (Doran et al. 2006b).

Despite the differences between the Quality Health Outcomes Model and the Nursing Role Effectiveness Model, it is apparent that the outcome measures in each model have

been classified in similar ways. Table 2.1 compares the two different approaches to exploring outcomes related to nursing care.

Table 2.1: An exploration of the approaches used in the Quality Health Outcomes Model and the Nursing Role Effectiveness Model for conceptualising the ***outcomes*** attributed to nursing care

Quality Health Outcomes Model	Nursing Role Effectiveness Model
Achievement of appropriate self-care	Functional status
Demonstration of health promoting behaviours	Therapeutic self-care
Health related quality of life	Symptom frequency
Perception of being well-cared for	Symptom severity
Symptom management	

After reviewing Table 2.1, it becomes apparent that neither of these approaches suggest that nursing care should be evaluated using mortality and / or morbidity data. This is in direct contrast to research being published at the time that examined linkages between nurse staffing and mortality (Aiken, Clarke & Sloane 2001; Finlayson & Gower 2002; Sasichay-Akkadechanunt, Scalzi & Jawad 2003; Seago & Ash 2002). This dichotomy between the theoretical approaches to measuring nursing outcomes and the reality of research published on the topic is still evident today with safety outcomes (including mortality) being studied much more frequently than other outcome measures.

2.3.4 Other conceptual frameworks

A number of other conceptual models have been developed to explore the link between structural measures of nursing and outcomes. They include Aiken, Sochalski and Lake (1997), Tourangeau et al. (2007) and O'Brien Pallas et al. (2010). Some of these conceptual frameworks are narrowly focused on nursing outcomes and / or organisational outcomes and others provide a mix of outcome measures that include patient outcomes, nursing outcomes and organisational outcomes. Figure 2.4 provides a visual representation of the Patient Care Delivery Model developed by O'Brien Pallas et al. (2010). This model has been presented because it is a good example of a conceptual model that has a broad focus on outcomes.

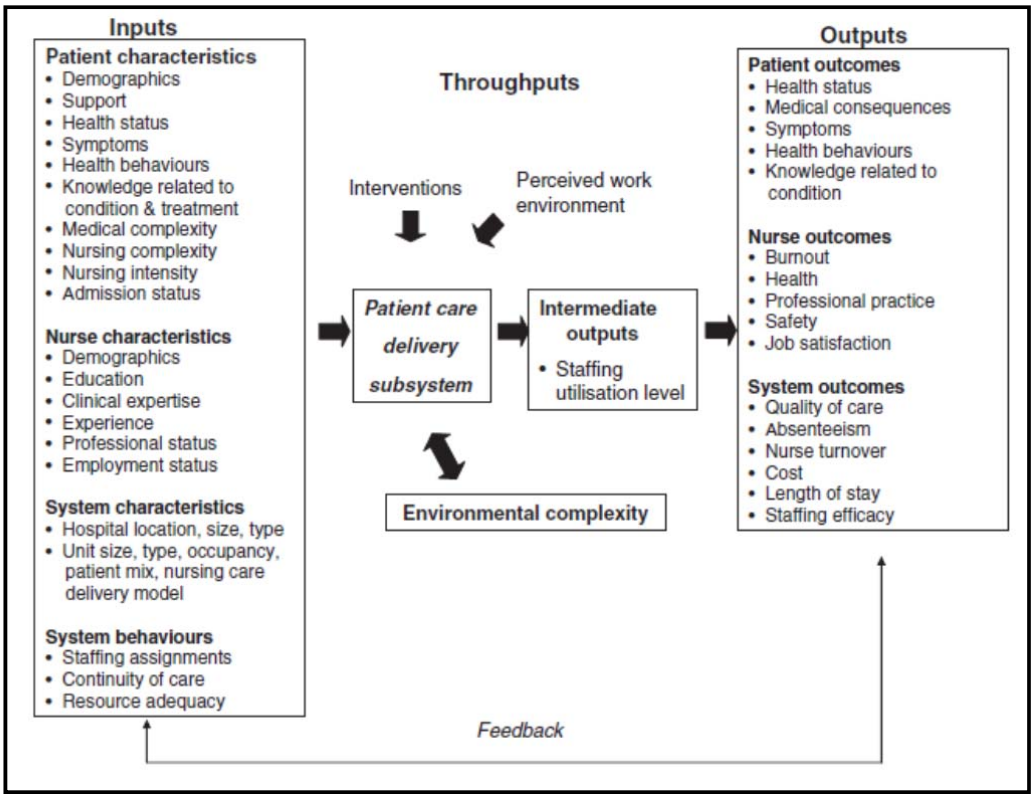

Figure 2.4: Patient Care Delivery Model (O'Brien Pallas et al. 2010, p. 1642)

This conceptual model uses inputs, throughputs and outputs as proxies for structure, process and outcome elements. It includes a wide range of outcomes that include patient outcomes (health status; medical consequences; symptoms; health behaviours; and knowledge related to condition), nurse outcomes (burnout; health; professional practice; safety; and job satisfaction) and system outcomes (quality of care, absenteeism; nurse turnover; cost; length of stay; and staffing efficacy). Analysis of the items listed as patient outcomes identifies similarities with the typology identified by Lohr and described as the *5 D's*: death, disease, disability, discomfort and dissatisfaction (Mitchell, Ferketich & Jennings 1998; Oermann & Huber 1999).

Because of the explicit focus in this research on patient outcomes, a more detailed discussion of other conceptual models that primarily focus on nurse outcomes or organisational outcomes is not included in this review of the literature. A discussion of the role of nurses and nursing work is now presented.

2.4 Measuring Nursing practice

As previously stated, the measurement of nursing care is not a simple task. Nursing is one of the core activities of healthcare services (Needleman 2008). It is complex and it is not easy to define or separate from the broader hospital or healthcare experience.

Nursing is conceptualised and practiced differently by individuals. Many nurses hold different views on what nursing care is and how it should be delivered. There are some commonalities in these views but there are also many differences and a high degree of subjectivity. These views are influenced by the individual nurse's philosophical approach to nursing, their education and background, their nursing experiences and the practice settings in which they work. Research on what constitutes a *good* nurse has been undertaken. From a nurses' perspective the following four characteristics have been identified (Arman & Rehbsfeldt 2007; Bassett 2002; Lynn & McMillen 1999; Miller 2006; Smith & Godfrey 2002):

- personal characteristics (caring, being present, showing compassion, showing respect for self and others);
- professional characteristics (being patient-centred, respecting the code of ethics and professional standards of care);
- knowledge base (forming a strong professional and situational knowledge base, using critical thinking); and
- professional skills (demonstrating safe and competent nursing care).

Patients, in contrast have differing views on what good quality nursing involves. They are likely to care more about the communication, listening, kindness and responsiveness of the nurses that are caring for them (Burhans & Alligood 2010).

American journalist and advocate for nursing, Suzanne Gordon offers this summary of nursing:

> "Using their considerable knowledge, [nurses] protect patients from the risks and consequences of illness, disability, and infirmity, as well as from the risks and consequences of the treatment of illness. They also protect patients from the risks that occur when illness and vulnerability make it difficult, impossible, or even lethal for patients to perform the activities of daily living - ordinary acts like

> breathing, turning, going to the toilet, coughing, or swallowing... Nurses, regular, ordinary, bedside nurses, not just nurse practitioners or advanced-practice nurses, are constantly participating in the act of... diagnosis, prescription, and treatment and thus make a real difference in ...outcomes" (Gordon 2006, p. 2, 4).

It is clear therefore that nursing is important, it is difficult to measure, but measuring it is important. The lack of consensus about what constitutes good nursing care and the absence of a consensus view or universal measure of quality nursing practice makes it even more complex.

The measurement of nursing care and its impact on patient outcomes, led to the development of the term *nursing-sensitive outcome* in the early 1990s (Hegyvary 1993). Nursing-sensitive outcomes aim to identify and measure the unique or specific contribution(s) that nursing care has on patient outcomes. A variety of definitions have been used within the published literature and a summary of them is outlined in Table 2.2.

Table 2.2: Definitions used within the published literature to describe nursing-sensitive outcomes and related terms

Author	Definitions of nursing-sensitive patient outcomes (nurse-sensitive patient outcomes) and related terms
Butler et al. (2011)	Nursing-sensitive patient outcomes are defined as "variable patient or family caregiver states, behaviours, or perceptions at a low level of abstraction that are responsive to nursing interventions and used for determining a patient outcome" (Gordon 1998, cited in Butler et al. 2011, p. 8). Nursing-sensitive outcomes are "those that are relevant, based on nurses' scope and domain of practice, and for which there is empirical evidence linking nursing inputs and interventions to the outcomes" (Doran 2003, cited in Butler et al. 2011, p. 8).
Doran, Midon and Clarke (2011)	Nursing-sensitive outcomes are, "those that are relevant, based on nurses' scope and domain of practice, and for which there is empirical evidence linking nursing inputs and interventions to the outcomes" (Doran 2003, cited in Doran, Mildon and Clarke 2011, p. 42). Nursing-sensitive indicators are, "the data elements that are collected and analysed to identify nursing-sensitive outcomes" (Doran, Mildon and Clarke 2011, p. 42).
Abad-Corpa et al. (2010)	A nurse-sensitive outcome is, "a variable, behaviour or perception of the patient/family that can be measured over time and which will respond to a nursing intervention (healthcare outcome produced by nursing care)" (Nursing and Health Outcomes Project 2001, cited in Abad-Corpa et al. 2010, p. 1846).
Jansson, Pilhammar-Andersson and Forsberg (2010)	Nursing-sensitive outcome indicators (NSOI) focus on, "how patients, and their conditions, are affected by their interaction with nursing staff" (American Nurses Association 1995, cited in Jansson, Pilhammar-Anderson and Forsberg 2010, p. 612).
Muller-Staub et al. (2009)	Nursing-sensitive patient outcomes refer to, "those outcomes that nurses are responsible for attaining" (Delaney et al. 1992 and Van der Bruggen and Groen 1999, cited in Mueller-Staub et al. 2009, p. 1029).
Nakrem et al. (2009)	Nursing-sensitive quality indicators are, "measures of changes in health status upon which nursing care may have direct influence" (International Council of Nurses 2001, cited in Nakrem et al. 2009, p. 849).
Schneider, Barkauskas and Keenan (2008)	A nursing-sensitive patient outcome is defined as, "an individual, family or community state, behaviour, or perception that is measured along a continuum in response to nursing intervention(s)" (Moorhead et al. 2004, cited in Schneider, Barkauskas and Keenan 2008, p. 77).
Bolton et al. (2007b)	Nursing-sensitive performance measures are, "processes and outcomes, and structural proxies for these processes and outcomes (skill mix, staffing hours), that are affected, provided, and/or influenced by nursing personnel, but for which nursing is not exclusively responsible. Nursing-sensitive measures must be quantifiably influenced by nursing personnel, but the relationship is not necessarily causal" (National Quality Forum 2004 cited in Bolton et al. 2007, p. 124S).

Author	Definitions of nursing-sensitive patient outcomes (nurse-sensitive patient outcomes) and related terms
Lee (2007)	Nursing-sensitive patient outcomes are defined as, "the change of a patient's health status caused by nursing interventions" (Lang and Marek 1990 cited in Lee 2007, p. 1022) and the general patient state, behaviour, or perception resulting from nursing interventions (Johnson et al. 2000, cited in Lee 2007, p. 1022).
Muller-Staub et al. (2007)	Nursing-sensitive patient outcomes are described as, "changes in the patient's health as a result of nursing interventions" (Muller-Staub et al. 2007, p. 6).
Doran et al. (2006a)	Nursing-sensitive outcomes are, "those that are relevant, based on nurses' scope and domain of practice, and for which there is empirical evidence linking nursing inputs and interventions to the outcomes" (Doran 2003, cited in Doran et al. 2006a, p. 63).
Doran et al. (2006b)	Nursing-sensitive outcomes are, 'those that are relevant, based on nurses' scope and domain of practice, and for which there is empirical evidence linking nursing inputs and interventions to the outcomes" (Doran 2003, cited in Doran et al. 2006b, p. S77).
Gobel, Beck and O'Leary (2006)	Nursing-sensitive patient outcomes are, "outcomes that are attained though or are significantly impacted by nursing interventions. The interventions must be within the scope of nursing practice and integral to the processes of nursing care" (Given et al. 2004, cited in Gobel, Beck and O'Leary 2006, p. 621).
Muller-Staub et al. (2006)	Nursing outcomes "describe changes in a patient's state of health as a result of nursing interventions" (Mass et al. 1996, cited in Muller-Staub et al. 2006, p.516). Nursing-sensitive outcomes (NSO) are, "measurable patient conditions that result from nursing interventions and for which nurses are responsible" (Delaney et al. 1992, and Van der Bruggen and Groen 1999, cited inMuller-Staub et al. 2006, p. 516).
Given and Sherwood (2005)	A nursing-sensitive patient outcome (NSPO) can be described "as a patient state that is sensitive to nursing intervention when procedures for measurement can be defined" (Jennings, Staggers, and Brosch 1999 and Maas, Johnson, and Moorhead 1996, cited in Given and Sherwood 2005, p. 774).
Cranley and Doran (2004)	Outcomes identified as sensitive to nursing are "those that are relevant based on nurses' scope and domain of practice and for which there is empiric evidence linking nursing inputs and interventions to the outcome" (Doran 2003, cited in Cranley and Doran 2004, p. 14).
Gudmundsdottir et al. (2004)	Nursing-sensitive patient outcomes were defined as "measurable patient or family states, behaviours or perceptions, conceptualized as variable and largely influenced by and sensitive to nursing services" (Iowa Outcomes Project 2000, cited in Gudmundsdottir et al. 2004, p. 293).
Doran et al. (2003)	Nursing-sensitive patient outcomes "are outcomes that can be empirically or theoretically linked to the actions of Registered Nurses (RNs) or Registered Practical Nurses (RPNs)" (Doran et al. 2003, p. 111).

Author	Definitions of nursing-sensitive patient outcomes (nurse-sensitive patient outcomes) and related terms
Doran (2003)	Nursing-sensitive outcomes are, "those that are relevant, based on nurses' scope and domain of practice and for which there is empirical evidence linking nursing inputs and interventions to the outcomes" (Doran 2003, p. viii).
Buerhaus and Needleman (2000)	Nurse sensitive outcomes are a "variable patient or family caregiver state, condition, or perception responsive to nursing intervention" (Maas, Johnson and Moorhead 1996, cited in Buerhaus and Needleman 2000, p. 7).
Wong, Stewart and Gilliss (2000)	A nurse-sensitive patient outcome is defined as "a variable patient or family caregiver state, behaviour, or perception that is responsive to a nursing intervention" (Johnson and Maas 1997, cited in Wong, Stewart and Gilliss 2000, p. 29).
Lichtig, Knauf and Milholland (1999)	Nursing-sensitive quality indicators are "patient outcome measures that may be influenced by nursing interventions" (Lichtig, Knauf and Milholland 1999, p. 25).
Van der Bruggen and Groen (1999)	A nurse-sensitive patient outcome (or desirable outcome or actual outcome) is, "a result measured or observed along a time continuum in response to nursing care" (Van der Bruggen and Groen 1999, p. 97).

Following analysis of these definitions, this project adopted the definition by Doran (2003). The rationale for choosing this particular definition was the explicit linkage between the actions of nurses and the outcome experienced by patients. Doran (2003) describes nursing-sensitive outcomes as "those that are relevant, based on nurses' scope and domain of practice and for which there is empirical evidence linking nursing inputs and interventions to the outcomes" [for patients] (Doran 2003, p. viii). It is clear from this definition that nursing-sensitive outcomes represent the consequences or the effects of the actions of nurses and the outcome should be seen in changes in, or maintenance of, the patient's health related state (Doran 2003).

Doran's (2003) definition of nursing-sensitive outcomes requires nursing actions to also be defined. Again, this is not an easy task. McCloskey and Bulechek (2000) provide a definition of a nursing intervention. They describe it as, "any treatment based upon clinical judgement and knowledge that a nurse performs to enhance patient / client outcomes" (McCloskey & Bulechek 2000, p. xix). Both Doran's (2003) definition of nursing-sensitive outcomes and McCloskey and Bulechek's (2000) definition of nursing actions, make explicit the requirement to link nursing actions with outcome measures

that assess the impact of nursing work on patient outcomes. The linkage between nursing actions and the patient outcomes being examined is seen as fundamentally important to ensure that nursing's unique contribution to patient outcomes is being evaluated.

This section discussed the complexity of nursing work and presented a definition of nursing-sensitive patient outcomes. The next part of the literature review provides an historical overview of the development of research on nursing-sensitive patient outcomes.

Part 2: A historical overview of the development of the concept of nursing-sensitive outcomes

The purpose of this section of the literature review is to describe the major research initiatives undertaken on nursing-sensitive outcomes with the aim of learning from the development of knowledge in this field to date. This approach enables a discussion to be presented on the evolution of research on this topic and the implications this has had for ongoing research and conceptual understandings related to the topic - including the present study.

2.5 The history of nursing outcomes research

Florence Nightingale is credited as being the first person to attempt to measure the outcomes of nursing care when she studied morbidity and mortality statistics during the Crimean war (Marek 1998; Sale 2000). There is little evidence that other nurses were interested in identifying the outcomes of nursing care until the 1960s when changes in the financing and structure of healthcare services, particularly in the USA, resulted in a new focus on *quality of care* (Given & Sherwood 2005). At this time, the previously mentioned framework by Donabedian of *structure, process and outcome* was published (Donabedian 1966).

During the 1960s most research related to healthcare focused on hospital structures and processes with the aim of identifying factors in healthcare organisations that impacted on the quality of patient care (Doran 2003). Quality assurance audit tools such as Qualpacs, Monitor and Phaneuf's Nursing Audit were developed and utilised during this time period (Redfern & Norman 1995; Sale 2000). These nursing audit tools are characterised by techniques which assess the process of care but do not specifically examine the outcomes of the nursing care that they measure (Sale 2000).

It is only in recent times that the study of outcomes has become more widespread. Donabedian (1980) defined outcomes as the changes that are observed in a patient or client's health condition that result from the care that has been provided to them. The examination of nursing outcomes is an attempt to identify the impact that nurses and nursing care has had on patient outcomes. The term *nursing-sensitive patient outcomes*, is frequently used to represent this concept.

Over the last two decades a large volume of research has been published on measuring nursing outcomes and the following section of this literature review explores how nurse researchers have gone about examining the link(s) between nursing care and patient outcomes. Following analysis of the literature, it has become evident that there are eight major research initiatives that can be categorised as *key* endeavours in measuring nursing-sensitive outcomes. They are the:

- American Nurses Association Patient Safety and Quality Initiative (Lichtig, Knauf & Milholland 1999; American Nurses Association 2000);
- California Nursing Outcomes Coalition (CalNOC) (Aydin & Donaldson 2004);
- Harvard School of Public Health study (Needleman et al. 2002);
- International Study on Hospital Outcomes (Aiken et al. 2001b);
- Kaiser Permanente Medical Care Programme Northern California Region Project (Ditmyer et al. 1998);
- Nursing Staff Mix Outcomes Study in Ontario (Doran 2003);
- Nursing Outcomes Classification developed by researchers from the University of Iowa (Maas & Delaney 2004); and
- National Quality Forum's NQF15 (National Quality Forum (NQF) 2004).

Each of these research initiatives is now explored in some depth. Many of these research initiatives led to the development of other research projects and scholarly activities. Most include programmes of research with numerous academic publications. Where relevant to the topic these are also discussed.

2.5.1 The American Nurses Association patient safety and quality initiative

In 1994, the American Nurses Association initiated a programme that was called the *Patient Safety and Quality Initiative* (Hall 2002). This programme involved several projects but had as its broad aim the development, testing, storage and evaluation of nursing-sensitive indicators; exploring in particular, the relationship between nurse staffing and patient outcomes (Hall 2002). Quantitative data was abstracted from mandated hospital reporting systems and patient discharge abstracts from 502 hospitals in three states within the USA. Adverse events were identified from medical record coding and total nursing hours per nursing intensity weight and the percentage of care provided by registered nurses were calculated (Blegen 2006; Lichtig, Knauf & Milholland 1999; Hall 2002). Five of the original outcomes that were included were; [the incidence of] urinary tract infections, postoperative infections, pneumonia, pressure ulcers and patient length of stay (Doran 2003; Hall 2002). The original analysis indicated a significant statistical relationship between the incidence of all five of these adverse events and lower numbers of nurses and / or lower numbers of registered nurses as part of the nursing staff compliment (Hall 2002; Blegen 2006). There are significant concerns regarding the methodology of this research. The data was abstracted from medical records and its accuracy is thus dependent upon the quality and accuracy of the medical record documentation. This may have impacted on the reliability of this research, though it is a common and respected methodology in health outcomes research. Indicator definitions for the collection of nursing data also appeared to vary in different states. Despite these limitations, this research initiative led to the development of the National Database of Nursing Quality Indicators (NDNQI) by the American Nurses Association. Ten of the indicators from NDNQI formed part of the original National Quality Forum's nursing-sensitive measure set which is commonly referred to as the NQF-15 (now referred to as the NQF-12) (Kurtzman & Corrigan 2007).

2.5.2 California Nursing Outcomes Coalition (CalNOC)

The American Nurses Association project (above) also formed the starting point for the development of the California Nursing Outcomes Coalition (CalNOC) database project which is now known as the Collaborative Alliance for Nursing Outcomes (CALNOC) (Aydin & Donaldson 2004; Bolton et al. 2003). CALNOC is a regional nursing quality measurement database aimed at advancing improvements in patient care through the collection of data about patient outcomes that are sensitive to nursing care (Brown, Aydin & Donaldson 2008). The research conducted by CALNOC is characterised by data being collected at unit level so that comparisons can more readily be made about the impact of changes in nursing staffing on patient outcomes at the point of care (Aydin & Donaldson 2004). Following the development of data definitions; standardised and validated collection tools; and the use of data from member organisations in California, other states in America and some international sites, CALNOC have published research on nursing-sensitive outcomes from over 200 hospitals and healthcare organisations (CALNOC 2010).

CALNOC data has been used to analyse the impact of California's mandated nurse to patient ratios on: unit level staffing; the incidence of patient falls; the prevalence of hospital acquired pressure ulcers; and the use of restraint (Donaldson et al. 2005). Interestingly, within this research no statistically significant differences were found in the studied patient outcomes after registered nurse and licensed vocational nurse staffing levels were improved following implementation of the mandated staff to patient ratios within the state of California (Donaldson et al. 2005). A follow up study looking for longer term effects, was completed in 2007. This follow-up study also did not identify any significant alterations in the patient outcomes studied following implementation of the mandated staff to patient ratios (Bolton et al. 2007a). The authors concluded from this research that the nursing-sensitive outcome measures used in their study may be multifactorial and that a wider range of variables than mere numbers of nursing staff may need to be examined to determine the impact of nursing care (Donaldson et al. 2005; Bolton et al. 2007a). Based on the requirement for nursing actions to be linked with the patient outcomes being measured, it would seem reasonable to suggest that the measurement of a larger range of process indicators

would also assist in identifying multifactorial variables and assist in linking nursing actions with patient outcome measures.

In recent times CALNOC have begun to measure some additional process measures. These include: examining the risk assessment process and prevention protocols for falls and hospital acquired pressure ulcers; observation of nurses' adherence to medication accuracy safe practice; and PICC line insertion practices (Donaldson 2010). The ability to assist member organisations to collect structure, process and outcome measures and then benchmark them amongst groups is very promising.

2.5.3 The Harvard School of Public Health

The Harvard School of Public Health research group also focused on the prevalence of adverse events to study structural indicators of nursing practice (Needleman et al. 2002). Quantitative data from administrative data sets within mandatory government reports on the costs and outcomes of care from 799 hospitals in eleven states of the USA were explored (Needleman et al. 2002). From this data twelve adverse outcomes (urinary tract infections, pressure ulcers, hospital acquired pneumonia, shock or cardiac arrest, upper gastro-intestinal bleeding, hospital acquired sepsis, deep venous thrombosis, central nervous system complications, in-hospital death, wound infection, pulmonary failure and metabolic derangement) and patient length of stay were studied (Needleman et al. 2002). The proportion of staff who were registered nurses and the number of hours of care per day provided by registered nurses was also determined from hospital data (Needleman et al. 2002). This research found statistically significant relationships between one or both of the staffing measures and the following adverse outcomes for medical patients: length of stay, urinary tract infections, hospital acquired pneumonia, shock or cardiac arrest and upper gastrointestinal bleeding (Needleman et al. 2002). Similar relationships were found between staffing measures and the following outcomes for surgical patients: urinary tract infections and failure to rescue (Needleman et al. 2002). Failure to rescue was described by Needleman and colleagues (2002) as death that resulted from pneumonia, shock, upper gastro-intestinal bleeding, sepsis or deep venous thrombosis.

Despite the publication of this research in the popular press as well as in scholarly journals, there have been some concerns about the methodology. Blegen (2006) for example commented on the collection of data at hospital level rather than unit level. This has implications for the reliability and validity of the study when applied to ward environments and the allocation of nurses at the unit level which is normally the functional unit of staffing allocation and where measurement appears to be most valid (Blegen 2006). The statistical modelling used by Needleman et al. (2002) to extrapolate effect is also very complex, and Naylor (2007) has questioned whether the outcomes in this research are as a result of nursing staffing or some other unknown effect that is yet to be identified. It is also worth noting that Needleman and colleagues (2002) purported to measure nursing care based upon structural outputs rather than processes. This may have implications for the conceptual validity of the measurement of nursing care as linking structural elements of care to outcomes without considering the processes of care can result in confounding variables being responsible for the effect.

2.5.4 International Study on Hospital Outcomes

Aiken and colleagues completed several large international studies on hospital outcomes and nursing staffing over a number of years. Their research focused upon the link between nursing staffing and patient outcomes that was identified in earlier Magnet hospital research. Aiken and colleagues hypothesised that nurses who experience higher degrees of autonomy, control of resources at unit level, and collaborative relationships with medical staff will provide nursing care that delivers better patient outcomes, including higher levels of patient satisfaction, a reduction in adverse outcomes and lower patient mortality when compared to organisations that do not have the aforementioned Magnet characteristics (Aiken, Smith & Lake 1994; Aiken, Clarke & Sloane 2001; Needleman, Kurtzman & Kizer 2007). Through research in five countries, including over 700 hospitals and 45,300 nurses, Aiken and colleagues established an empirical link between nurse staffing, the nursing practice environment, mortality rates and rates of failure to rescue (Aiken et al. 2001b; Cheung & Aiken 2008; Friese & Aiken 2008).

This research used self-report data from nurses to obtain information on organisational climate, nurse staffing, and nurse and patient outcomes. The researchers achieved a response rate of between 42 and 53 percent across the five countries that were part of the sampling frame (Aiken et al. 2001b). The researchers then compared the quantitative survey data with data abstracted from patient administration databases on 30 day mortality and other patient outcome measures. Validated measurement tools were used to collect data; however, the use of nurses' self-report data to extrapolate hospital staffing rates raise some methodological concerns regarding data accuracy in the analysis (Blegen 2006). There is also concern from the authors themselves that data abstraction from discharge databases does not enable researchers to fully understand the complexities of the patient outcome measures, particularly relatively new concepts such as failure to rescue (Clarke & Aiken 2003). More research is needed on the concept of failure to rescue, but it (through examination of the concept of nursing surveillance) does promise to provide a theoretical framework that explains the link between nursing actions and patient outcomes at least for surgical patients in a hospital environment.

An extension of the International Hospital Outcomes study was performed by Schubert and colleagues in Switzerland (Schubert et al. 2008). This research examined the concept of the rationing of nursing tasks, and examined the relationship between tasks left undone and patient outcomes. A measurement tool was developed and validated by the authors and in subsequent research the patient outcomes of nosocomial infections, prevalence of pressure ulcers and patient satisfaction were determined to be sensitive to rationing, with higher rates of these adverse events and lower patient satisfaction when rationing of care was reported (Schubert et al. 2009). This concept of rationing of nursing care and tasks left undone correlates with research performed on *nurse dose* which was described by Brooten and Youngblut (2006). Brooten and Youngblut (2006) described the concept of *nurse dose* following analysis of the nurse staffing research and the work of Aiken and colleagues in the International Hospitals Outcome Study (Aiken et al. 2001b). *Nurse dose* takes into consideration the number of nurses available and the amount of care able to be delivered, the expertise and experience of the nursing staff and the receptiveness of the organisational culture and individual patients to enable the nurse to be autonomous (Brooten & Youngblut 2006). The

concept of *nurse dose* is increasingly being used in definitions of nursing-sensitive outcome measures (Donaldson 2010).

2.5.5 Kaiser Permanente Medical Care Programme Northern California Region

In contrast to the use of adverse events (only) to measure nursing-sensitive outcomes, the Kaiser Permanente Medical Care Programme Northern California Region undertook a project that focused on a more holistic view of the impact nursing care has on patient outcomes (Ditmyer et al. 1998). Nurse leaders in Kaiser Permanente took the view that adverse events did not fully capture the impact of nursing care on patient outcomes (Ditmyer et al. 1998). They developed a database to capture measures of functional status, knowledge and engagement in healthcare, and patient and family psychosocial well-being across the continuum of care (Ditmyer et al. 1998). After piloting this data set they added skin breakdown, the presence of distressing symptoms and the incidence of nosocomial and urinary tract infections (Lush 2001, cited in Doran 2003, p. 6). This data was captured on all patients as part of the general assessment of each patient and as such could be used to evaluate practice at an individual patient level.

This change in how care was delivered and recorded within Kaiser Permanente was evaluated and has been reported within the nursing literature (Ditmyer et al. 1998). This project was a clinical initiative to collect and record nursing outcome data in an entire healthcare system through the development of a database that captured nursing interventions and patient outcomes (Ditmyer et al. 1998). Doran (2003) describes the project as setting the gold standard in developing systems that provide outcome data as part of routine nursing care. Consensus agreement on valid and reliable outcome measures for collection of data could usefully be incorporated into future research: the development of consensus on what to collect and then using systems such as those developed in Kaiser Permanente would add rigour to the data and aid in transferability of findings to other populations. Through the development of databases that record the outcomes of nursing work as part of routine documentation requirements, as per the Kaiser Permanente approach, nursing outcomes might then be able to be abstracted from clinical databases in a valid and meaningful way on a wider scale.

2.5.6 Nursing Staff Mix Outcomes Study

The Nursing Staff Mix Outcomes Study has been a significant programme of research undertaken at the University of Toronto under the leadership of Doran (Doran 2003). Like the Kaiser Permanente Medical Care Programme Northern California Region project, Doran and her colleagues took a more holistic view of nursing actions and the patient outcomes selected were a combination of patient well-being, patient satisfaction and adverse events (Hall 2002). The original Nursing Staff Mix Outcomes study found that higher numbers of registered nurses in the skill mix were associated with better patient outcomes at discharge (Doran et al. 2003). This research team did not focus on structural measures of nursing but explored the process of nursing care and used established tools which were further validated to ensure that they were sensitive to measuring the outcomes of nursing care on patients. This led on to a programme of research from this prolific group of authors which continues to explore the clinical, functional, safety and perceptual aspects of nursing care on patient outcomes in a holistic and focused way (Doran 2003; Doran et al. 2006a; Doran et al. 2006b; Irvine et al. 2000; Sidani 2008). This research has been conducted across a wide variety of settings including acute, community and long term care, and methodological rigour and assessment of sensitivity to nursing are characteristics of the research conducted by this research team. There has also been an attempt to provide a theoretical framework for its description through the development of the Nursing Role Effectiveness Model (this was described earlier) which used Donabedian's structure, process and outcome model to describe the dependent, independent and interdependent roles of nursing (Irvine, Sidani & Hall 1998).

2.5.7 Nursing Outcomes Classification (NOC)

Another significant area of research has been the development of the Nursing Outcomes Classification by nursing researchers from the University of Iowa (Maas & Delaney 2004). These researchers developed a comprehensive, research based classification and measurement system for 385 individual, family and community level outcomes that can be used to describe nursing care across the patient continuum (Moorhead et al. 2008). Each outcome they defined, is grounded in clinical practice and research, uses clear language and has a consistent organising structure and typology. The research team and

other authors have demonstrated the reliability and validity of all 385 individual, family and community level outcomes through extensive testing (Head, Maas & Johnson 2003). This research builds on and complements the use of nursing minimum data sets, North American Nursing Diagnosis Association (NANDA) diagnostic codes and the Nursing Intervention Classification, to provide a standardised nursing vocabulary for the purpose of electronic medical record documentation and the design of computerised datasets for research (Maas, Johnson & Moorhead 1996). The researchers aimed to have documentation related to nursing interventions and outcomes embedded within electronic medical record documentation so that data abstraction on nursing interventions and the outcome of that care could be accessed and used in a way that had never been imagined before (Maas, Johnson & Moorhead 1996).

Despite numerous studies using the Nursing Outcomes Classification, the incorporation of this data set in electronic medical record documentation has been slow and to date it is not being used extensively in research involving data abstraction (Head, Maas & Johnson 2003).

2.5.8 National Quality Forum's Nursing-sensitive measures (NQF -15)

In 2004, the National Quality Forum in the United States of America endorsed a set of fifteen voluntary consensus standards for measuring *nursing-sensitive* care (National Quality Forum (NQF) 2004). The NQF-15 is frequently described as representing the first set of nationally standardized performance measures designed to assess how nurses in acute care hospitals contribute to healthcare quality, patient safety, and a professional and safe work environment (National Quality Forum (NQF) 2004; Kurtzman & Corrigan 2007). The measures were identified following review of the literature, a public 'call for measures' to be nominated and then consensus agreement by an expert committee to develop the indicator set (Kurtzman & Corrigan 2007). The responses included measures already being collected by organisations such as the National Database of Nursing Quality Indicators (NDNQI) and the California Nursing Outcomes Coalition (CalNOC).

The NQF-15 (National Quality Forum (NQF) 2004) was made up of the following measures:

1. Failure to rescue
2. Pressure ulcer prevalence
3. Falls
4. Falls with injury
5. Restraint (vest and limb) prevalence
6. Urinary catheter-associated urinary tract infections (intensive care unit, ICU)
7. Central line catheter-associated bloodstream infections (ICU)
8. Ventilator-associated pneumonia (ICU)
9. Smoking cessation counselling for acute myocardial infarction
10. Smoking cessation counselling for pneumonia
11. Smoking cessation counselling for heart failure
12. Skill mix
13. Nursing hours per patient day
14. Practice Environment Scale-Nursing Work Index
15. Voluntary turnover

The endorsement by the NQF of a set of nursing performance measures was seen as an important step in the evolution of research examining the outcomes of nursing care (Kurtzman & Corrigan 2007). Ongoing research, policy development and quality improvement initiatives have been developed as a result of the development of the NQF 15. Additional funding has also been made available to continue to refine the set of measures and explore other priority areas identified by the NQF. An example of this is the Interdisciplinary Nursing Quality Research Initiative (INQRI) which is funded by the Robert Wood Johnson Foundation.

In 2009 the Joint Commission published an implementation guide for the NQF endorsed nursing-sensitive care performance measures in which only twelve of the original fifteen measures continued to be endorsed by the NQF. The measures relating to smoking cessation were discontinued in 2009 (The Joint Commission 2009). There is no evidence within the literature that organisations are collecting and reporting the *set* of

nursing-sensitive measures as endorsed by the NQF. A number of organisations including the National Database of Nursing Quality Indicators (NDNQI), and the Collaborative Alliance for Nursing Outcomes (CALNOC) and a number of datasets including the Military Nursing Outcomes database (MilNOD) and the Veterans Affairs Nursing Outcomes database (VANOD) all purport to use a number of NQF endorsed measures for nursing-sensitive care but no organisation collects the entire set.

The eight major research initiatives that were explored in this section of the literature review have been categorised as *key* endeavours in measuring nursing-sensitive outcomes. Each of them has made a significant contribution to the body of knowledge on nursing-sensitive patient outcomes. The knowledge development and understanding has in some cases been diverse but it has all been iterative. The discussion of these key studies clearly shows that there is no clear and agreed *right way* as to how to measure the unique contribution(s) that nurses make to patient outcomes. A discussion of some of the lessons learnt from the examination of these key studies is now presented.

2.6 Identifying conceptual challenges in measuring the outcomes of nursing practice

The purpose of examining nursing outcomes from a historical perspective was to provide an overview of the major initiatives which have been previously used to measure the outcomes of nursing care and how these initiatives have impacted on the understanding and use of nursing-sensitive patient indicators and nursing-sensitive patient outcomes in both research and practice. The philosopher George Santayana (1905, p. 284) said, "… those who cannot remember the past are condemned to repeat it". Consequently, having examined research on nursing outcomes, it is evident that there are things to learn from the research conducted to date.

In a commentary published by Sean Clarke in 2009, some significant challenges associated with research on nurse staffing and patient outcomes were highlighted. Many of these challenges have occurred because of the way in which outcomes research in

nursing has evolved and because of the complexity involved in examining nursing's unique role in patient outcomes.

It is the opinion of Clarke (2009, p. 151) that much of the existing research on nurse-sensitive patient outcomes uses "big picture" variables and data that is obtainable from administrative datasets about hospital operations. The end result of this is that we examine the shadow of nursing rather than the substance of it (Clarke 2006). Clarke (2009) also comments on the sources of data used in nurse staffing outcomes research.

> "It is no secret that the state of large-scale, computerized documentation of health services in general and of nursing in particular remains abysmal. Furthermore, the insights about how much nursing attention and/or care patients get and the quality of care they receive that can be gleaned from existing databases remain very limited" (Clarke 2009, p. 152).

In addition to these statements Clarke (2009) also encourages practicing nurses, administrators and researchers to examine the complexity of the problem and to look to a future solution. This may involve resolving problems related to theoretical linkages between the aspects of nursing care being measured and the patient outcomes that result, and improving the methodological rigour of individual studies.

In an attempt to consider these issues as part of planning a research project a number of specific conceptual challenges were identified. The first conceptual challenge involves the question of whether research examining the impact nurses and nursing care has on patient outcomes, is actually measuring nursing's (unique) contribution to those outcomes. The phrase *nursing-sensitive patient outcomes* have been used, but are the outcomes we are measuring actually sensitive to nursing? For an outcome to be described as a nursing-sensitive patient outcome, the outcome being measured must be directly attributable to the consequences or effects of nursing intervention (Doran 2003). Much of the literature on nursing-sensitive outcomes does not provide explicit linkages between the nursing actions or interventions and the outcomes being measured. This is an important conceptual issue which has implications for the validity of the body of knowledge on nursing-sensitive outcomes.

The second conceptual issue relates to the focus of the outcomes being measured. There is a very large body of knowledge about nursing outcomes which has given us a broad understanding of the topic and lots of empirical evidence about it; but when the body of literature is examined closely, safety measures (mostly measuring the incidence of adverse events) dominate all other measures; and quality of care is examined in only a minority of cases. Many may argue that this focus on safety is justified, after all one of a nurse's primary objectives is to keep the patient safe and prevent or at worst, minimise any harm occurring. Florence Nightingale in 1863 even said that we "should do the sick no harm"(Nightingale 1969, p. iii). It seems reasonable to argue however, that as this body of knowledge about the impact of nursing care on patient outcomes is expanded and refined, it is time we, (that is all nurses) focused on the *quality* as well as the *safety* of care. Nurses should be able to articulate the contributions that we make to patient outcomes. We are also in an ideal position to act as an advocate for patients who are navigating the increasingly complex healthcare system and fulfil the role of *health service conscience* described by Suzanne Gordon (2006) earlier in this chapter.

Another conceptual challenge comes in unravelling the unique impact nursing has on patient outcomes, when nursing is delivered as part of the overall care provision of a healthcare team. All nurses recognise that they work in, and as part of, a healthcare team. Identification of the unique contributions that an individual profession makes within a team is part of this challenge. Nurses are however, the largest professional group within healthcare and the inability to define and measure the impact of nursing work is professionally compromising. The structure, organisation and culture within a team also have significant impacts on nursing work and outcomes of nursing care (Sochalski 2004). This is evident in the large volume of research that examines the linkages between nurse staffing and patient outcomes (Aiken et al. 2001b; Hall & Doran 2007; Sochalski, Estabrooks & Humphrey 2009). It would seem then that measuring nursing's contribution is more than just quantifying and justifying the number and type of nursing staff required. The nursing contribution to patient outcomes is in part independent and unique, but is also, at other times dependent on others (e.g. via the enacting of 'doctors orders'), and/or interdependent on the entire healthcare team involved in delivery of healthcare services. This has been described conceptually by Irvine, Sidani and Hall (1998) within their Nursing Role Effectiveness Model.

The patient outcome measures identified within the Nursing Role Effectiveness Model have been categorised into measures that examine functional status, therapeutic self-care, symptom frequency and symptom severity (Doran et al. 2006b). There are also other ways of categorising outcomes. In a previous publication Doran (2003) classified nursing-sensitive outcomes as:

- Clinical (which include, symptom control and symptom severity);
- Functional (which include, physical and psychosocial functioning and self-care abilities);
- Safety (which include, adverse events and complications); and
- Perceptual (which include, satisfaction with nursing care and with the results of care).

The classification of nursing-sensitive patient outcomes into categories highlights another conceptual challenge: not only do the outcomes being measured need to be directly linked to nursing actions and interventions, but they should also reflect the broad spread of actions or interventions of nurses and reflect the contributions nurses make to patient outcomes in a comprehensive and balanced way. Nursing-sensitive outcomes are unlikely to be able to capture every outcome that is attributable to nursing actions (after all no indicator ever totally reflects the complexity or totality of what it indicates). However, if nursing-sensitive outcomes are to be meaningful to nurses, patients and healthcare organisations, they need to explore the overall contributions of nurses to patient outcomes and not focus solely on one aspect of care.

The conceptual challenges discussed in this section of the literature review have been identified following review of the published literature on nursing-sensitive outcomes. Each conceptual issue became evident when analysing the body of literature and has been considered when designing the research approach that is used in this study and described in this thesis. For this reason, the following concepts have been important factors in the conception and design of this study:

- ensuring that the patient outcomes being studied can be directly attributed to nurses and / or nursing care;

- a balanced approach to outcomes is examined (this includes ensuring that more than safety is examined);
- the role of nurses in and within teams is explored; and
- the outcomes included within an indicator set include a broad spread of actions of nurses.

Having explored the history of research on nursing-sensitive patient outcomes and discussed some of the conceptual challenges involved in nursing-sensitive outcomes research, the third and final component of the literature review is now presented.

Part 3: An exploration and evaluation of contemporary research on nursing-sensitive patient outcomes

The purpose of this section of the literature review is to establish the current context for ongoing research that examines nursing-sensitive patient outcomes. It uses integrative review methods to identify and analyse the indicators and outcomes that have been used to evaluate the impact nursing care has on patient outcomes. It also analyses how conceptual frameworks have been used to measure nursing's contribution to patient outcomes and explores the methodological approaches that have been used within this body of work.

An integrative review is a specific review method that summarises the literature on a specific topic to provide a comprehensive understanding of a particular phenomenon or problem (Broome 1993). Using an integrative review method enabled all research on the topic to be examined with the aim of facilitating understanding of the entire body of literature. It facilitated development of the researcher's knowledge on the important concepts that could be used to measure nursing's contribution to patient outcomes. This aided in identifying the specific indicators that can be used as nursing-sensitive patient indicators and outcomes and informed Phase 1 of the research project.

2.7 Contemporary research on nursing-sensitive outcomes

The initial purpose of this part of the literature review was to review all available literature that examined the impact of nursing care on *patient outcomes*. The review was deliberately broad and aimed to include a wide cross-section of patient outcomes. Measurement of the quality of nursing care, the safety of nursing care and patient perceptions about nursing care, were all considered equally important. Large scale research endeavours and small, single-unit studies were all included.

An integrative review was chosen as the method for this part of the literature review because of its ability to include diverse methodologies (including experimental and non-experimental designs) and because it enables a variety of perspectives on a phenomenon, in this case, nursing-sensitive outcomes, to be presented and analysed (Whittemore & Knafl 2005). An integrative review specifically enables concepts within the phenomenon of interest to be identified, evidence on the phenomenon to be assessed and methodological issues to be identified (Whittemore & Knafl 2005). These were all important components of this literature review so an integrative review was deemed to be the most appropriate method for this task.

Whittemore and Knafl (2005) have identified five steps that should be included within an integrative review. These five steps have been incorporated within this review in the following way:

1. Problem identification
2. Literature search
3. Evaluation of the quality of each article
4. Review each article to identify theme(s)
5. Organise the themes and critically evaluate the contribution of each theme to the development of knowledge about nursing-sensitive outcome measures

2.7.1 Problem identification

The purpose of the integrative review of the published literature on nursing-sensitive patient outcomes was to:

- Identify the indicators and outcomes that have been used to measure the impact that nursing care has on patient outcomes;
- Identify if a conceptual framework(s) was used to guide data collection and analysis;
- Explore the methodological approaches used within this body of work; and
- Develop an understanding of how nursing care might best be measured

2.7.2 Literature search

The integrative review used the same search strategy described in section 2.2 earlier in this chapter. The search strategy yielded 3247 potential articles with many duplicates.

In an attempt to focus the literature review, a number of inclusion criteria were applied to select the relevant literature for the integrative review. The inclusion criteria were:

1. Articles identified as primary sources, and peer reviewed; OR Articles identified as secondary research using the method of a systematic review with or without a meta-analysis, and peer reviewed;
2. Articles that examined the impact of nursing care on ***patient outcomes***;
3. Studies published in the ten year period 2002 to 2011; and
4. Studies published in English

Literature exclusion criteria were also used. The exclusion criteria included: abstracts, conference proceedings, editorials, commentary papers, letters, and articles that did not directly examine patient outcomes. After application of the inclusion and exclusion criteria, 110 articles were identified as relevant for the integrative literature review.

2.7.3 Evaluation of the quality of each article

The final sample for the integrative review included primary and secondary research using quantitative and qualitative methods. The included literature encompassed a wide variety of methods. Due to the diversity of the included literature, research studies were coded according to two criteria relevant to this review: methodological rigour and data relevance on a 2-point scale (high or low). This process of quality review is consistent

with recommendations by Whittemore and Knafl (2005). No research studies were excluded based on this quality rating system; however, the score was included as a variable in the data analysis stage. In general, research of low rigour and relevance contributed less to the analytic process.

2.7.4 Findings from the integrative review

The final results of the literature review are presented in a table that summarises all the selected articles. The full details of the 110 articles are presented in Appendix 1. After the evaluation of the quality of the 110 articles, each article was reviewed to identify the themes related to the indicators and / or outcome measures being used in the research. Each individual theme was then grouped together and reviewed as a whole and the key findings of the integrative literature review were what emerged from analysis of each group of themes (Sandelowski, Barroso & Voils 2007).

Using an integrative review of the literature, all of the identified relevant articles were extensively reviewed to identify themes related to nursing-sensitive patient outcomes. The following themes were identified: clinical outcomes; functional outcomes; safety outcomes; and perception. A discussion of these themes is presented in the following section. The use of conceptual frameworks to guide data collection and analysis, and the methodological approaches used to undertake this body of research were also explored and are presented as additional themes.

2.7.4.1 Theme 1: Clinical outcomes

For the purpose of this literature review, clinical outcomes were conceptualised to include management of symptoms, (including symptom severity, symptom control and symptom management), length of stay and discharge outcomes. The literature that explores any of these components either as the focus of the study or as an element within the study has been grouped into this theme. Based on the integrative literature review forty-six studies were found that included measurement of clinical outcomes. Five studies were reporting secondary research and they will be discussed first.

Bae (2011) conducted a systematic review on the relationships between nurse work conditions and patient outcomes. This systematic review included eleven primary research studies and used Lake's (2007) seven theory-based domains of the nursing practice environment to theme the findings. Fourteen (14) different patient outcome variables were examined within Bae's systematic review. Only two of these outcomes were clinical outcomes. The clinical outcomes that were examined were health status after discharge and length of stay. Bae (2011) identified one study that identified a positive relationship between nurse autonomy and length of stay; and three studies that identified significant positive relationships between satisfactory nurse-physician relationships and improved patient health status after discharge.

Butler et al. (2011) conducted a Cochrane review on the effect of nurse hospital staffing on patient and staff related outcomes. This systematic review included fifteen primary studies and in six of those studies length of stay was examined. No other clinical outcomes were examined in this systematic review. Butler et al. (2011) found that the addition of specialist nursing staff was most likely to result in a reduction in length of stay (Risk ratio = -1.35, 95% Confidence Interval -1.92 to -0.78). This result came from a meta-analysis that included two of the six primary studies that examined length of stay. The remaining four studies did not provide suitable data for inclusion in the meta-analysis.

Crowe et al. (2008) conducted a systematic review on the effectiveness of nursing interventions in reducing or relieving post-operative pain. This systematic review included nine primary studies including randomised controlled trials and other quasi-experimental research designs. The primary outcome that was examined was the relief or reduction of post-operative pain. Other clinical measures that were examined were analgesia consumption and length of hospital stay. Crowe et al. (2008) found no strong evidence that any one particular intervention was more effective than usual care with both the usual care and the intervention being found equally effective in all primary studies examined.

Griffiths et al. (2005) conducted a systematic review on the effectiveness of nursing-led units in intermediate care settings for preparing patients for discharge. Nine primary

studies were included in this review. The only measure examined in this systematic review that was classified as a clinical measure was length of stay. Eight primary studies contributed to the meta-analysis that was conducted. The findings of the meta-analysis were that patients cared for in the nursing-led inpatient units had a longer length of stay when compared to usual inpatient care (Weighted Mean Difference of +5.13 days, 95% Confidence interval -0.5 to 10.76 days). It is important to note that this result was not statistically significant.

Thungjaroenkul, Cummings and Embleton (2007) conducted a systematic review on the impact of nurse staffing on hospital costs and patient length of stay. A total of seventeen primary studies were included in this systematic review with eleven of those studies examining length of stay. Of these eleven studies, the authors stated that seven found that a higher Registered Nurse to patient ratios reduced hospital length of stay and / or intensive care unit length of stay. A meta-analysis was not conducted because of the variability in outcome measurements used between studies and the heterogeneity that was evident amongst the primary research on the topic. Despite this, the authors concluded that higher numbers of registered nurses per patient can result in a reduction in length of stay but there is no conclusive evidence of this within this systematic review.

Of the remaining forty-two primary research studies a wide variety of clinical outcomes were measured. Length of stay in some form was the most frequently examined concept, with thirteen studies including it as a primary outcome. Most studies used average length of stay. The majority of studies that examined length of stay used descriptive, retrospective designs or analysed secondary data sets using descriptive designs. In most cases length of stay was examined in combination with safety outcomes (for example, Capuano et al. 2005; Dall et al. 2009; Frith et al. 2010; McCloskey & Diers 2005; Needleman et al. 2006; Twigg et al. 2011). Blegen et al. (2011) examined the proportion of patients with a length of stay greater than that expected for their diagnosis (using case-mix data). This use of risk adjustment by Blegen et al. (2011) was not described in other studies.

Pain was the second most frequently examined clinical outcome. Six primary research studies examined pain as an outcome measure (Beck et al. 2010; Doran et al. 2003; Frank-Stromborg et al. 2002; Hall et al. 2003; Potter et al. 2003; Seago 2008) with a further four studies also examining perception of pain or a process measure related to pain management (Barkell, Killinger & Schultz 2002; Blondal & Halldorsdottir 2009; Doran et al. 2006a; Doran et al. 2006b). All these studies used descriptive designs and most relied on patient surveys to obtain data.

A variety of other symptoms were also examined within this body of literature. The symptoms included fatigue, hydration, nutritional status and weight loss. Six studies examined process or outcome measures related to general symptoms (Doran et al. 2003; Frank-Stromborg et al. 2002; Horn 2008; Scherb, Stevens & Busman 2007; Skrutkowski et al. 2008; Visvanathan, Penhall & Chapman 2004) and two studies examined patients expectations related to symptom management (Chang, Hughes & Mark 2006; Potter et al. 2003). All data in these studies were collected using descriptive patient surveys and / or audits of medical record documentation.

Health status was examined in five primary studies with specific foci on: health status after discharge; readiness for discharge; readiness to resume usual pre-illness activities; and discharge outcomes. Doran et al. (2002) used a cross sectional design to conduct surveys and chart audits of 372 patients and 254 nurses within twenty-six units. Readiness to resume usual activities was assessed using a four item likert scale. Jansson, Pilhammar-Andersson and Forsberg (2010) used a retrospective, cross-sectional design to examine the impact documented nursing care plans have on outcomes. Discharge outcomes were assessed by using survey data to evaluate utilisation of services following discharge. Lindhardt, Nyberg and Hallberg (2008) used a cross-sectional survey of carers to evaluate satisfaction with discharge preparedness and found that low satisfaction was associated with low levels of collaboration between staff and between staff and the person (and their carers) receiving care. Weiss, Yakusheva and Bobay (2010) used a cross-sectional survey in four hospitals to examine patient perceptions of discharge readiness and found that discharge occurred when nurses perceived that a patient was ready for discharge but that nurses' perceptions regarding discharge readiness did not correlate with patient perceptions of their readiness for discharge. Yen

and Lo (2004) examined the impact of coordination of care on patient perceptions of quality of care, continuity of care and discharge preparedness amongst 755 patients using a cross-sectional survey. Yen and Lo (2004) found that higher patient perceptions of coordination of care resulted in higher rates of perceived discharge preparedness and shorter lengths of stay.

Clinical outcomes were also measured holistically using the *Nursing Outcomes Classification* (NOC) in three studies. Behrenbeck et al. (2005) used a case study to analyse the inter rater reliability of sixty-six of the potential 190 NOC indicators in one hospital in the USA. Brokel and Hoffman (2005) also used a case study to evaluate a set of NOC indicators titled the *Dignified Dying Outcomes* in one inpatient and community hospice service in the USA. Muller-Staub et al. (2008) used a cluster, randomised controlled experimental design to evaluate the use of an educational intervention on the accuracy of documentation of nursing diagnoses, interventions and outcomes. This experimental study found that guided clinical reasoning can be used to support nurses' abilities to identify, document and evaluate nursing diagnoses, interventions and outcomes.

In other studies that examined clinical outcomes in a holistic way, both palliative care outcomes and outcomes within residential aged care were assessed. Palliative care outcomes were examined using mixed methods in a study conducted by Corner et al. (2003). In this study, quality of life and an instrument called the *Palliative Care Outcomes Scale* were used to measure health related quality of life, anxiety and outcomes amongst the specialised palliative care patient population. Courtney et al. (2007) used nominal groups to identify the *Clinical Care Indicators* (CCI) tool for assessing clinical quality in residential aged care in Australia. Data was collected from twenty-seven (plus an additional four) residential aged care facilities to validate the CCI tool. Validation and testing of both the Palliative Care Outcomes Scale and the Clinical Care Indicators Tool is ongoing.

In completing the analysis of articles within the theme of clinical outcomes, it became apparent that some additional concepts related to caring, individualisation of care and coordination of care and teamwork also needed to be discussed. These concepts do not

appear to fit neatly into the theme of clinical outcomes; however, they all impact on clinical care and clinical outcomes, and as a result it was decided that they should be discussed as part of this theme. While these concepts did not appear frequently within the literature their presence added a level of descriptive clarity to other concepts and for this reason they are now explored as a component of clinical outcomes.

Caring was examined by McCance, Slater and McCormack (2008) in a repeated measures, descriptive design that used patient and nurse surveys to assess the patients perceptions of caring. Individualisation of care was examined by Suhonen, Valimaki and Leino-Kilpi (2005), Suhonen, Valimaki and Leino-Kilpi (2008), and Poochikian-Sarkissian et al. (2010) using cross-sectional designs to assess the correlation between patient participation in care, patients perceptions of their care and the individuality of nursing care provided to patients. Radwin, Cabral and Wilkes (2009) also examined the ability of nurses to respond to the individual care requirement of patients by measuring patient satisfaction, trust in nurses, optimism, fortitude, well-being and patient acuity / illness severity.

The concepts of coordination of care and teamwork were also examined in three studies. Tourangeau et al. (2007) conducted a large, retrospective cross-sectional survey using secondary data and included nurse reports of the presence of documented care using care maps and care pathways, and nurse reports of teamwork as process measures that were examined. Tourangeau et al. (2007) found that the presence of documented care maps / pathways and higher reports of teamwork were associated with lower rates of mortality. Yen and Lo (2004) identified that the patient perception of continuity of care was associated with shorter length of stay. Chaboyer, McMurray and Wallis (2010) used a descriptive case study to examine the impact of handover communication on a number of clinical processes. In this study, the intervention involved changes to handover processes and this resulted in significant improvements in the processes and outcomes measured.

In summary, the theme of clinical outcomes included literature that examined management of symptoms, (including symptom severity, symptom control and symptom management), length of stay and discharge outcomes. Studies that explored

the concepts of caring, individualisation of care, coordination of care and teamwork were also included within this theme. The concepts of length of stay, pain management and perception of preparedness for discharge were the most frequently examined concepts. Very few process measures were examined. Most studies used descriptive surveys, chart audits or observations to examine the concepts being studied. Only a small number of studies used validated, reliable tools for data collection. Those studies that collected a set of data (for example using the *Nursing Outcomes Classification*, the *Palliative Care Outcomes Scale* or the *Clinical Care Indicators* tool) published varying degrees of instrument validity. The concepts of patient perceptions of caring and individuality of care enabled the patient's perceptions of the nursing care they received to be examined. The examination of the nurses' roles in coordinating care and the presence of teamwork were linked to clinical outcomes in a number of studies.

2.7.4.2 Theme 2: Functional outcomes

For the purposes of this literature review functional outcomes are defined as nursing-sensitive patient outcomes that measure a "patients' physical, psychological and social functioning [and their] self-care ability" (Sidani 2008, p. 27). The literature that explores any of these components either as the focus of a study or as an element within a study has been grouped into this theme. Based on the integrative literature review protocol, twenty two studies were found that included measurement of functional outcomes. Two studies reported secondary research and they are discussed first.

Griffiths et al. (2005) conducted a systematic review on the effectiveness of nursing-led units in intermediate care settings for preparing patients for discharge. Nine primary studies were included in this review. One of the key measures was functional status and included studies using an instrument that conceptualised functional status in terms of "dependence on nursing care (e.g. the Barthel Index)" (Griffiths et al. 2005, pp. 110-111). Two additional outcome measures that were considered as proxies for functional status were discharge destination and readmission within one month. For functional outcome measures, patients admitted to the nursing-led units had improved outcomes. The odds of being discharged to institutional care were reduced (Odds Ratio 0.44, 95% Confidence Interval 0.22-0.89); functional outcomes were improved (Standardised

Mean Difference 0.37, 95% Confidence Interval 0.20-0.54); and odds of readmission within one month were improved (Odds Ratio 0.52, 95% Confidence Interval 0.34-0.80) if discharge was from a nursing-led unit.

Keleher et al. (2009) conducted a systematic review of the impact of primary care nursing and community nursing on patient health outcomes compared with usual doctor-led care in primary care settings. Thirty-one studies met the inclusion criteria for this review and functional status was examined through evaluation of quality of life in nineteen of these studies. The majority of those that examined quality of life showed no difference between primary / community care nursing and usual doctor-led care in primary care settings. Some studies in specialised areas of nursing care did demonstrate some differences with home visiting programmes by maternal and child health nurses and home visiting programmes for patients with major depressive illnesses, reporting better quality of life with nurse-led care.

Of the remaining twenty primary research studies, a variety of approaches were used to examine functional outcomes. Four studies by Doran and colleagues (Doran et al. 2002; Doran et al. 2003; Doran et al. 2006a; Doran et al. 2006b) all examined functional outcomes in a comprehensive way. These studies used a combination of tools to assess functional outcomes. The measurement methods included the use of instruments developed and validated by the research team, including: the *Therapeutic Self Care Ability Scale*, and *Readiness to Resume Usual Role Scale*. Additionally, instruments with established validity were also used including the *Functional Improvement Measure* (FIM); activities of daily living items from the *Nursing Minimum Data Set 2.0*; the *Stanford Health Assessment Questionnaire* (HAQ); and the *Linear Analogue Assessment Scale*. All four of these studies identified that improvements in functional status that were associated with nursing care could be reliably quantified and measured with validity using this variety of different approaches and measurement instruments.

Another comprehensive approach to measuring functional status is evident in research studies using the *Nursing Outcomes Classification* (NOC). This includes a case study reported by Behrenbeck et al. (2005), a case study reported by Brokel and Hoffman (2005), and a study using a cluster, randomised controlled design reported by Muller-

Staub et al. (2008). Each of these articles describe the application of the NOC and the recording of nursing interventions and nursing outcomes as it relates to physical and psychological care, and self-care ability. High inter-rater reliability is reported in all studies and the use of the NOC for recording nursing interventions and patient outcomes as a result of these interventions was validated.

Poochikian-Sarkissian et al. (2010) used a descriptive, correlational design to examine the presence of person-centred care and the impact that person-centred care may have on patient outcomes. This study used the *Individualised Care Scale*, the *Patient Participation in Care Scale*, the *Therapeutic Self-Care Index* and the *Medical Outcome Study – Short Form 36* (*SF36*) to examine functional outcomes. While the numbers of nurses and patients involved in the study were small, the researchers found statistically significant associations between implementation of specific dimensions of person centred care and improvements in patient self-care ability and patient outcomes. A similar approach was also used in a study by Sidani (2008) where the ability of acute care nurses to provide person-centred care to 320 patients at eight different hospitals was evaluated. The impact of person centred care on functional outcomes was measured using the *Individualised Care Scale*, the *Therapeutic Self-Care Index* and the *SF-36*. As in the study by Poochikian-Sarkissian et al. (2010), Sidani (2008) also found that successful implementation of person-centred care was associated with improved self-care ability.

Suhonen, Valimaki and Leino-Kilpi (2005) and Suhonen et al. (2007) examined the impact that individualised nursing care has on patient outcomes. The *Individualised Care Scale* was used in both studies in combination with different measures to assess health status (the *Nottingham Health Profile*) and health related quality of life (*EuroQol 5D* or the *15D* questionnaire). This research established a link between the individuality of nursing care and patient outcomes (specifically enhanced patient satisfaction, patient autonomy and perceived health related quality of life).

The other studies that examined functional outcomes did so by examination of the concept in a specific context or using specific tools. Hall et al. (2003) used the *Functional Improvement Measure* (*FIM*) and the *SF-36* to measure functional

improvement in patients as a result of nursing care. Jansson, Pilhammar-Andersson and Forsberg (2010) examined whether documented nursing care plans affect patient outcomes and used health related quality of life as a functional nursing-sensitive outcome indicator. Corner et al. (2003) used quality of life in combination with the *Palliative Care Outcomes Scale* to examine functional status and the provision of nursing care to patients receiving specialist palliative care services. Frank-Stromborg et al. (2002) used discharge data and follow-up service utilisation as a proxy for ability to self-care following discharge. Lindhardt, Nyberg and Hallberg (2008) used patients perception of readiness for discharge to assess functional status at discharge from hospital.

In summary, the theme of functional outcomes has explored the literature on a patients' physical, psychological and social functioning and their self-care ability. Most research that examined functional status used validated and reliable measurement tools. The Functional Improvement Measure (FIM), the Barthel Index, various measures of Quality of Life (QOL) and the Stanford Health Assessment Questionnaire (HAQ) were commonly used. All these tools are used in multi-disciplinary research. In addition, measurement tools were developed and validated to assess nursing's impact on individualisation of care and self-care ability. Many of these tools were used in multiple research studies and the researchers demonstrated instrument validity across multiple studies. The concepts of person-centred care and individualisation of care were used as interventions to examine functional outcomes in a number of studies. These concepts enabled the patient's perception of the care to be included in the evaluation of the nursing care being examined.

2.7.4.3 Theme 3: Safety outcomes

For the purpose of this literature review, safety outcomes have been defined as nursing-sensitive patient outcomes that measure concepts related to patient safety. The literature that explores any of these components either as the focus of the study or as an element within the study has been grouped into this theme. Based on the integrative literature review seventy-one studies were found that included measurement of safety outcomes. Eight studies reported secondary research and they are discussed first.

Bae (2011) conducted a systematic review on the relationships between nurse work conditions and patient outcomes. This systematic review included eleven primary research studies. The findings of this review indicate that there is no conclusive link between positive work conditions and safety outcomes for patients, despite individual studies identifying some positive associations.

Butler et al. (2011) conducted a Cochrane review (including a meta-analysis) on the effect of hospital nurse staffing on patient and staff related outcomes. The review found no evidence that the addition of specialist nurses to the total nursing staff reduces mortality or readmission rates. Butler et al. (2011) state that additional staff may reduce the incidence of pressure ulcers; however, the evidence for this assertion came from one study and the association between staffing levels and pressure ulcers in that study was not statistically significant.

Griffiths et al. (2005) conducted a systematic review on the effectiveness of nursing-led units in intermediate care settings for preparing patients for discharge. Nine primary studies were included in this review. A total of seven of these studies examined one or more aspects of safety outcomes for patients. No statistically significant differences in mortality for patients cared for in nursing led units when compared with usual inpatient care were found.

Kane et al. (2007) conducted a systematic review and meta-analysis to examine the association between Registered Nurse (RN) staffing and patient outcomes in acute care hospitals. Twenty eight primary studies were included in the review. The nursing-sensitive patient outcomes examined in the review were: hospital related mortality; failure to rescue; cardiac arrest; shock; unplanned extubation; respiratory failure; deep venous thrombosis; upper gastrointestinal bleeding; surgical bleeding; patient falls; pressure ulcers; nosocomial infections; urinary tract infection; hospital acquired pneumonia; and nosocomial bloodstream infection. Kane et al. (2007) examined the impact that one additional RN per patient day had on these outcomes. The findings suggest that an increase in one RN per patient day was associated with the following:

- Lower hospital related mortality in intensive care units (ICUs) (Odds Ratio 0.91, 95% Confidence interval, 0.86 to 0.91);

- Lower hospital related mortality in surgical patients (Odds Ratio 0.84, 95% Confidence interval, 0.80 to 0.89);
- Lower hospital related mortality in medical patients (Odds Ratio 0.94, 95% Confidence interval, 0.94 to 0.95);
- Decreased odds ratio of hospital acquired pneumonia in ICUs (Odds Ratio 0.70, 95% Confidence interval, 0.56 to 0.88);
- Decreased odds ratio of unplanned extubation in ICUs (Odds Ratio 0.49, 95% Confidence interval, 0.36 to 0.67);
- Decreased odds ratio of respiratory failure in ICUs (Odds Ratio 0.40, 95% Confidence interval, 0.27 to 0.59);
- Decreased odds ratio of cardiac arrest in ICUs (Odds Ratio 0.72, 95% Confidence interval, 0.62 to 0.84); and
- Lower risk of failure to rescue in surgical patients (Odds Ratio 0.84, 95% Confidence interval, 0.79 to 0.90).

The study analysed findings of primary studies collecting data at patient and at hospital level separately. An interesting finding was that studies conducted at patient level reported generally larger effects of Registered Nurse staffing on mortality. Overall, the study found that increased Registered Nurse staffing in hospitals is associated with improvements in safety outcomes for patients.

Kazanjian et al. (2005) conducted a systematic review on the impact that hospital nursing environments have on patient mortality. Twenty seven primary studies were included in the review. Nineteen of these studies found an association between one or more attributes of the nursing environment and patient mortality. A met-analysis could not be undertaken due to the variability in sample attributes and outcome measures; however, the authors conclude that there is strong evidence that social and environmental attributes of the hospital environment impact upon patient mortality but further studies need to be undertaken to provide a better understanding of the mechanisms that link the nursing environment to mortality.

Keleher et al. (2009) conducted a systematic review on the effectiveness of primary care nursing on patient health outcomes. Of the thirty one included studies, six examined the

impact of primary care nursing on mortality. In one of these six studies there was evidence that primary care nursing when compared to cared delivered by medical officers in general practice improved mortality and in all the other five studies there was no difference between primary care nursing and the usual doctor-led care within primary care settings.

Lankshear, Sheldon and Maynard (2005) conducted a systematic review to assess evidence of a relationship between the nursing workforce and patient outcomes in acute hospitals. Twenty-two primary studies were included in the review, with many being described by the authors as poor quality. The majority of the studies included used cross-sectional designs and large public administrative datasets to identify correlations between staffing and mortality with little or no risk-adjustments or control for case mix variations. Even though a meta-analysis was not conducted, the authors suggest that higher nurse staffing levels and richer skill mix of the nursing staff are associated with improvements in patient outcomes. They form this conclusion based upon the accumulation of evidence from all studies.

Wong and Cummings (2007) conducted a systematic review on the relationship between nursing leadership and patient outcomes. Seven primary studies were included in the review. The authors suggest that based upon their review, there are significant associations between positive leadership behaviours, styles or practices and reduced adverse events. The relationship between nursing leadership and mortality was inconclusive.

In the remaining sixty three studies that examined safety outcomes a large percentage (49%) examined safety outcomes without exploring any other aspect of patient care. A small percentage (6%) of these examined mortality in isolation from any other outcome. A small but significant number (13%) used an approach developed by Needleman et al. (2001) to examine a comprehensive whole of body systems approach to examining safety outcomes while many other studies only examined one adverse event. Very large multi-centre studies and small single unit studies were reported. A discussion of some of these studies is now presented.

Thirty one of the sixty three primary studies within this theme of safety outcomes explored one or more safety outcomes in isolation from any other category of patient outcomes. Some examples of studies which took this patient safety approach to measuring patient outcomes include: Chaboyer et al. (2010), Donaldson et al. (2005), Friese and Aiken (2008), Furukawa, Raghu and Shao (2010) and Patrician et al. (2011). Four studies examined only *mortality* (Cho, Hwang & Kim 2008; Needleman et al. 2011; Sasichay-Akkadechanunt, Scalzi & Jawad 2003; Trinkoff et al. 2011) with a further three studies examining *mortality* and *failure to rescue* in isolation from any other patient outcome (Halm et al. 2005; Harless & Mark 2010; Sochalski et al. 2008).

The analysis of safety outcomes using methods developed by Needleman et al. (2001) was evident within the literature. Eight studies used algorithms developed by Needleman and colleagues (2001) or modified versions of those algorithms to assess safety outcomes from patient discharge abstracts. This approach includes the following patient outcomes: central nervous system (CNS) complications; wound infections; pulmonary failure; urinary tract infection (UTI); pressure ulcers; pneumonia; deep vein thrombosis; ulcer/gastritis/upper gastrointestinal bleed; sepsis; physiologic/metabolic derangement; shock/cardiac arrest; mortality; failure to rescue; and length of stay (Twigg et al. 2011).

All of the studies that used Needleman's approach obtained data from administrative data sets that contained patient discharge abstracts or reviewed patient discharge abstracts in the facility being studied. A large amount of variability is present between the studies using these methods. Berney and Needleman (2006) found an association between increased overtime and a reduction in mortality for medical and surgical patients. Dall et al. (2009) found that an increase in nurse staffing levels resulted in a reduction in risk of nosocomial complications. By comparison, McCloskey and Diers (2005) conducted a study in New Zealand, and found that nine of the thirteen patient outcomes examined had statistically significant increases in their rate of occurrence over the period studied (1992 to 2000). McCloskey and Diers (2005) attributed this change to hospital reengineering that resulted in reductions in the number of nurses providing patient care and changes to nursing management structures throughout the country. Twigg et al. (2011) also found significant changes following implementation of

a mandated staffing level using nursing hours per patient day (NHPPD). There was a significant reduction in nine nursing-sensitive outcomes when studied at facility level (mortality; central nervous system complications; pressure ulcers; deep vein thrombosis; sepsis; ulcer/gastritis/upper gastrointestinal bleed; shock/cardiac arrest; pneumonia; and average length of stay) and five nursing-sensitive outcomes when studied at unit level (mortality; shock/cardiac arrest; ulcer/gastritis/upper gastrointestinal bleed; length of stay; and urinary tract infections).

In contrast to the approach developed by Needleman et al. (2001), a number of other primary studies examined only one safety outcome. Horn (2008) examined the rate of pressure ulcers amongst people within residential aged care using secondary data from the National Pressure Ulcer Long Term Care Study. Minnick et al. (2007) examined physical restraint use in a large study that included 40 hospitals. Sujijantararat, Booth and Davis (2005) examined the relationship with nurse staffing and nosocomial urinary tract infections in a large hospital in Thailand.

In summary, the theme of safety outcomes included literature that examined concepts related to patient safety. A large volume of literature was included within this theme with seventy-one of the 110 studies included in the integrative review examining one or more safety outcomes. The secondary research examined within this theme provided inconsistent evidence about the impact of specialist nurses and / or additional nurses on safety outcomes. This may be due to the variability in methods used to examine safety outcomes. Collection of data at varying organisational levels (for example: unit level data when compared to hospital level data), use of data abstracted from administrative datasets and / or medical records and the variability in definitions used to collect data all had significant implications for the ability to pool results to undertake meta-analysis. Many of the primary research studies examined only safety outcomes when evaluating nursing care. Some of these studies only examined one concept, such as mortality. The evaluation of a *whole of body* systems approach to safety (as described by Needleman et al. 2001) was also seen in a number of studies. As a result of examining this theme, it became apparent that a very large percentage (65%) of research that is categorised as examining nursing-sensitive patient outcomes focuses on patient safety outcomes. Much of this research is negative in orientation and measures adverse events or what happens

when nursing care is not provided. As a result, research examining these concepts requires large sample sizes due to the relative infrequency of these events. This limits the types of study designs that can be used to examine the concept and results in a reliance on large administrative data sets for collection of the data. Very few process measures were reported within this theme with most research collecting structure and outcome measures. In addition, no studies examined safety from the perspective of the person receiving the care.

2.7.4.4 Theme 4: Perception

For the purposes of this literature review, perception has been conceptualised to include patient satisfaction and patient perceptions of nursing care. The literature that explores any of these components either as the focus of the study or as an element within the study has been grouped into this theme. Based on the integrative literature review protocol thirty nine studies were found that included perception as a measurement of patient outcomes. Three studies were reporting secondary research and they are discussed first.

Keleher et al. (2009) conducted a systematic review on the effectiveness of primary care nursing on patient health outcomes. Of the thirty one included studies, six examined patient satisfaction with nursing-led care as compared with doctor-led care in primary settings. Of these six studies, five found significantly higher levels of patient satisfaction with nursing-led care. An additional five studies examined patient satisfaction with nurses working as supplements to usual care in primary settings and in three of these five studies, there was significantly higher levels of satisfaction with care provided by nurses when compared with usual care.

Lankshear, Sheldon and Maynard (2005) conducted a systematic review to assess evidence of a relationship between the nursing workforce and patient outcomes in acute hospitals. Twenty-two primary studies were included in the review but only one study examined patient satisfaction. The authors report that patient satisfaction increases when registered nurse hours per patient day increase from the 4 to 4.5 hour to the 5 to 6 hour

range. No analysis of this data was presented and as a result no conclusions can be drawn from it.

Wong and Cummings (2007) conducted a systematic review on the relationship between nursing leadership and patient outcomes. Seven primary studies were included in the review. The authors suggest that based upon their review, there is significant associations between positive leadership behaviours, styles or practices and increased patient satisfaction. This assertion is based upon analysis of three articles that examined these associations.

Amongst the remaining thirty six primary studies perception was examined in a variety of ways. General satisfaction with care was reported in a large number of studies. Satisfaction or perceptions of a specific aspect of care was explored in a significant number of studies. The perception of caring attitudes and actions, or perception of trust in nurses, were also examined in a small number of studies. In addition to these concepts, a number of studies reported validation of instruments for measuring satisfaction and / or perception. A discussion of some of these studies is now presented.

Satisfaction with nursing care was reported in most studies that examined patients' perceptions of care. Most studies used validated tools to assess patient satisfaction and / or perceptions of care. The validated tools used include: *Parkside Patient Satisfaction Survey* (Barkell, Killinger & Schultz 2002); *Picker Institute Patient Satisfaction Survey* (Bolton et al. 2007a; Yen & Lo 2004); *Patient Perception of Hospital Experience with Nursing Care (PPHEN)* (Coban & Kasikci 2010); *Patient Judgement of Hospital Quality Questionnaire* (Doran et al. 2002; Doran et al. 2003; Hall et al. 2003; McCutcheon et al. 2009; Poochikian-Sarkissian et al. 2010); *Press-Ganey Patient Satisfaction Survey* (Freitag & Carroll 2011); *Quality of Patients Perspective instrument* (Jansson, Pilhammar-Andersson & Forsberg 2010); *Consumer Assessment of Healthcare Providers and Systems (HCAHPS)* (Otani, Herrmann & Kurz 2011; Sofaer et al. 2005); *Patient Satisfaction with Nursing Care Quality* (Patrician et al. 2010); *Oncology Patients Perceptions of Quality of Nursing Care Scale (OPPQNCS)* (Radwin, Alster & Rubin 2003; Radwin, Cabral & Wilkes 2009); *Schmidt Perception of Nursing Care Survey* (Suhonen et al. 2009); *Patient Satisfaction Scale* (Suhonen et al. 2007;

Suhonen, Valimaki & Leino-Kilpi 2005); *Humane Caring Scale – Revised* (Tervo-Heikkinen et al. 2008); *La Monica Oberst Patient Satisfaction Scale* (Vahey et al. 2004); and the *Nursing-sensitive Patient Satisfaction Scale* (Yang & Huang 2005). A number of studies used Likert scales that asked participants to rate one or more aspects of nursing care on a four or five point scale (Bae, Mark & Fried 2010; Schubert et al. 2009). Other studies modified existing patient satisfaction scales and then assessed instrument validity and reliability (Chang, Hughes & Mark 2006) or used instruments developed at their organisations and used historically to capture patient satisfaction (Gardner et al. 2007; Potter et al. 2003).

Patient satisfaction with *specific elements of nursing care*, were also examined in a number of studies. This included: specific focus on satisfaction with pain and pain management (Barkell, Killinger & Schultz 2002; Beck et al. 2010; Patrician et al. 2010; Seago 2008; Whitman et al. 2002b); satisfaction with management of other symptoms (Chang, Hughes & Mark 2006); satisfaction with planning for discharge (Lindhardt, Nyberg & Hallberg 2008; Patrician et al. 2010); satisfaction with involvement in decision making (Lindhardt, Nyberg & Hallberg 2008); satisfaction with education provided by nurses (Patrician et al. 2010; Seago 2008); and satisfaction with the physical care provided by nurses (Seago 2008). In addition to satisfaction, some studies also explored the concept of trust (Lindhardt, Nyberg & Hallberg 2008; Radwin, Cabral & Wilkes 2009).

A number of studies also explored *caring* as a concept and examined the quality of the caring relationship between patients and nurses from the patient's perspective. Finch (2008) reported the results from a qualitative study on caring behaviours. Duffy, Hoskins and Seifert (2007) used a cross-sectional survey to validate an instrument called the *Caring Assessment Tool* (CAT). The CAT uses a patient survey to gather data and asks patients to evaluate their perceptions of whether certain caring behaviours were evident within their hospital stay. McCance, Slater and McCormack (2008) used a repeated measures, descriptive design to assess patients' and nurses' perceptions of person-centred care using the *Person-Centred Nursing Index* (PCNI). This approach enabled differences between nurses' perceptions and patients' perceptions of person-centred caring to be evaluated.

A very small number of studies within the integrative review examined quality of care from the nurses' perspective (Mallidou et al. 2011; Stone et al. 2007; Tourangeau et al. 2007; Yen & Lo 2004). While this does not necessarily fit neatly within this theme, it is mentioned here because nurses' perceptions of quality of care are being used as a proxy for patient satisfaction within these studies.

In summary, the theme of *perception* has explored the literature that examined patients' satisfaction and patients' perceptions of nursing care. A large percentage of the research within this theme used valid and reliable measurement tools. The concept most frequently examined was patient satisfaction with nursing care. Other concepts explored included: satisfaction with pain management; satisfaction with management of symptoms other than pain; satisfaction with planning for discharge; satisfaction with involvement in decision making; satisfaction with education provided by nurses; satisfaction with physical care; perception of trust; perception of individualisation of care; satisfaction with presence of caring behaviours; and patients' perceptions of person-centred care. Patients' perceptions were conceptualised in some studies as a process measure and satisfaction was generally conceptualised as an outcome measure but most studies were not explicit about this.

This concludes discussion of patient outcomes measurement within the integrative review. The ways in which conceptual frameworks have been used in nursing-sensitive patient outcomes research is now presented.

2.7.4.5 Conceptual frameworks used in nursing-sensitive patient outcomes research

One of the aims of the integrative review was to identify any conceptual frameworks that have been used to guide research on measuring nursing's contribution to patient outcomes. An examination of conceptual frameworks and how they have been used in the research on measuring nursing's contribution to patient outcomes assists in identifying the:

- focus of the enquiry;
- key concepts being studied; and
- presumed relationships amongst the concepts being studied.

This theme explores the conceptual frameworks that were used in this body of literature.

For the purpose of this discussion Newman's (1979) definition of a conceptual framework has been used. Newman describes a conceptual framework as "an organisation or matrix of concepts that together provides a focus for inquiry" (Newman 1979, p. 6). A conceptual framework can be either a visual or written product and usually "explains, either graphically or in narrative form, the main things to be studied (the key factors, concepts, or variables) and the presumed relationships among them" (Miles & Huberman 1994, p. 18). It is important to recognise that this differs from a theoretical framework in that a conceptual framework examines relationships between variables at the descriptive and exploratory level whereas a theoretical framework seeks to predict and test relationships between the variables being examined (Ellis & Crookes 2004).

Approximately one third of the studies (thirty-eight out of 110) included in the integrative review described the use of a conceptual framework. A small number of studies described conceptual frameworks that were specifically developed to aid individual study design (Beck et al. 2010; Roche et al. 2010) but when a conceptual framework was used, the majority of them appropriately described the authors' theoretical understanding of the topic and the concepts and relationships being studied.

The most frequently described conceptual framework was Donabedian's structure, process and outcome model (eight studies) whilst another eight studies used a modified version of it. Examples of modified versions of Donabedian's structure, process and outcome model are: The Nursing Role Effectiveness Model (Doran et al. 2002; Doran et al. 2003; Doran et al. 2006a; Doran et al. 2006b); The Quality Health Outcomes Model (Radwin, Cabral & Wilkes 2009); the conceptual framework (untitled) used by Stone and colleagues (Stone et al. 2006; Stone et al. 2007); and the Input-process-outcome (IPO) framework (Bae, Mark & Fried 2010).

An alternate conceptual framework that was used was Needleman's approach to measuring nursing outcomes (Needleman et al. 2002). This conceptual framework was

explicitly described by Berney and Needleman (2006) and Twigg et al. (2011) but its influence was seen in two additional studies (McCloskey & Diers 2005; Shuldham et al. 2009). The nursing diagnosis / nursing interventions / nursing outcomes framework described by (Moorhead, Maas & Johnson 2003) which incorporates the use of North American Nursing Diagnosis Association (NANDA) diagnoses, the Nursing Interventions Classification (NIC) and the Nursing Outcomes Classification (NOC) was also used in a number of studies (Behrenbeck et al. 2005; Brokel & Hoffman 2005; Muller-Staub et al. 2008; Scherb, Stevens & Busman 2007). Conceptual frameworks focused on caring and person-centred care were also evident within the articles included in the integrative literature review (Duffy, Hoskins & Seifert 2007; Freitag & Carroll 2011; McCance, Slater & McCormack 2008; Poochikian-Sarkissian et al. 2010).

In summary, conceptual frameworks were used in approximately one-third of the literature included within the integrative review. A large number of studies that described a conceptual framework used the Donabedian framework or a modified version of it. Amongst the studies that took this approach, most focused on either structural or outcome measures (or a combination of both). Only a small number of studies purporting to use Donabedian's approach collected and / or reported process measures. Given that Donabedian's framework of structure, process and outcome measures explicitly requires all three categories to assess the quality of healthcare this is seen to be problematic.

2.7.4.6 Methodologies and methods used in nursing-sensitive patient outcomes research

One of the aims of the integrative review was to explore the methodological approaches used within the literature that examines the contribution that nursing care has on patient outcomes. The selection criteria included all primary and secondary research on the topic that met the inclusion criteria. This meant that no restrictions were made on study design or methodological approaches taken by the researcher. Despite these decisions, the vast majority of literature included within the integrative review is positivist and uses quantitative research methods. This is a characteristic of the approaches taken to examine the topic and is reflective of the literature.

The integrative review includes eleven secondary research articles. Most of these are systematic reviews of quantitative research that could not pool the statistical results for the primary studies included within them due to disparate outcome measures and the heterogeneity in research designs. Most of the primary articles included in each systematic review were quasi-experimental designs using cross-sectional surveys or secondary data analysis with data obtained from large datasets or administrative databases.

Of the ninety-nine primary studies included in the integrative review, the vast majority are quasi-experimental designs using cross sectional surveys. Most obtained data from a number of sources including patient surveys, nurse surveys and data from large datasets or administrative databases. Most used validated tools to obtain their data but the strength of that validity may be questionable in a moderate number of these studies. Some studies have collected and reported data over an extended time period (Doran et al. 2003; Doran et al. 2006a; Doran et al. 2006b; Hall et al. 2003; Harless & Mark 2010; Konetzka, Stearns & Park 2008; McCloskey & Diers 2005; Radwin, Cabral & Wilkes 2009; Schneider, Barkauskas & Keenan 2008; Sidani 2008; Twigg et al. 2011) but most have simply taken a snapshot at one point in time.

A couple of experimental designs were used. They include a study by Muller-Staub et al. (2008), Skrutkowski et al. (2008) and van Gaal et al. (2011). Mueller-Staub and colleagues (2008) used a cluster, randomised controlled design to examine whether an educational intervention (guided clinical reasoning of the Registered Nurse) impacted upon the accuracy and comprehensiveness of documenting accurate nursing diagnoses, nursing interventions and nursing outcomes. The study found that guided clinical reasoning was effective in improving documentation and that the reliability of documentation improved significantly in the group that had received the guided clinical reasoning as an educational intervention. The research did not examine if the intervention resulted in an improvement in documentation that was sustained over an extended period of time.

Skrutkowski and colleagues (2008) used a randomised controlled trial to examine the impact on continuity of care for patients who had their care delivered by a *pivot* nurse (a

named nurse responsible for care provision and coordination from diagnosis throughout treatment) in oncology when compared with usual oncology clinic care. The research variables that were examined were: symptom distress; fatigue levels; quality of life; and healthcare usage. There were no significant differences found between groups on these measures and the conclusion was made that pivot nurses did not impact on continuity of care.

Van Gaal and colleagues (2011) used a cluster, randomised controlled trial to examine a patient safety programme and the impact it had on patient outcomes. In the study, guidelines for improving care for three common adverse events (pressure ulcers, urinary tract infections and falls) were simultaneously implemented in the intervention group. Usual care was provided to the control group. The study found that simultaneous guideline implementation is possible and the rate of the studied adverse events decreased significantly within the intervention group in both hospital and nursing home clusters, when compared to *usual care*.

A small number of case studies were also described within the included studies in the integrative review. A case study usually took the form of a cross-sectional design within a single unit or ward. The research usually described an improvement project or initiative or was a pilot study. A number of instrument validation studies were also included. Most instrument validation studies related to development and / or testing of patient satisfaction surveys or assessment of one aspect of care (for example, caring or pain management). A few studies used qualitative research methods.

In summary, the methodological approaches used to examine nursing-sensitive patient outcomes are predominately quantitative and use positivist methodology. Most are quasi-experimental studies using cross-sectional designs. A couple of experimental studies were also undertaken. Several secondary research studies were also undertaken with most unable to pool results to perform meta-analysis due to disparate outcome measures and the heterogeneity in research designs.

2.7.5 Summary of the integrative literature review

The purpose of the integrative review of the published literature on nursing-sensitive patient outcomes was to: identify the indicators and outcomes that have been used to measure the impact that nursing care has on patient outcomes; identify if a conceptual framework(s) was used to guide data collection and analysis; explore the methodological approaches used within the body of work; and develop an understanding of how nursing care might best be measured. As a result of analysis of the included literature, four themes were identified to describe the indicators and outcomes used to measure the impact that nursing care has on patient outcomes.

The theme of clinical outcomes included literature that examined management of symptoms, (including symptom severity, symptom control and symptom management), length of stay, discharge outcomes, the concepts of caring, individualisation of care, coordination of care and teamwork. The theme of functional outcomes explored the literature that examined a patients' physical, psychological and social functioning and their self-care ability. The theme of safety dominated the literature and examined concepts related to patient safety. The theme of perception examined literature that studied patient satisfaction and patient perceptions of nursing care.

The integrative review also sought to identify how conceptual frameworks were used in the literature on nursing-sensitive patient outcomes and determine the research methodologies used to examine this topic. Conceptual frameworks were used in approximately one-third of the literature included within the integrative review. The methodological approaches used to examine nursing-sensitive patient outcomes were predominately quantitative and use positivist methodology.

As a result of completing the integrative review of the literature on nursing-sensitive patient outcomes the researcher has gained a better understanding of how nursing care might best be measured. A wide variety of concepts that could be used to measure nursing care were identified. This included concepts related to clinical care; caring; coordination of care; functional changes in a patient's condition; self-care ability; safety; and patient satisfaction / perception of the care they receive. Some gaps in the literature were also identified. They included: limited research on the concept of caring

and person-centred care; the relative absence of research exploring communication with patients; and the small volume of research examining nurses' communication with other members of the healthcare team.

The use of structure, process and outcome measures is seen as important to add conceptual rigour to the evaluation of the impact that nurses and nursing care have on patient outcomes. Collection of data at a point as close to the patient as possible is also viewed as the most reliable way of gathering data. In addition, instruments used to collect data should be valid and reliable and if indicators are used, then consistent data definitions should be used so that comparisons can be made between studies. Future research in this area should capture both the quality and the safety of nursing care and provide evaluation of as many components of a nurse's interaction with a patient as is feasible.

2.8 Summary of this chapter

This chapter has described the literature on measuring the impact of nurses and nursing care on patient outcomes. This represents an important issue as nurses make up a significant proportion of the healthcare workforce and yet there is no consensus agreement on what or how the impact of nursing care should be measured. The first part of the literature review examined the concept of patient outcomes and introduced Donabedian's (1966) framework for evaluating the quality of care using structure, process and outcome measures. The measurement of nursing care and definitions of nursing-sensitive patient outcomes were then presented. The second part of the literature review presented an historical account of the development of nursing outcome measures using the major research initiatives on nursing-sensitive outcomes to illustrate the development of knowledge in the field. This enabled the presentation of the evolution of research endeavours on the topic and the identification of some of the conceptual challenges evident in the research because of the way it has evolved. The third part of the literature review presented the results of an integrative review of all primary and secondary research undertaken on nursing-sensitive patient outcomes from 2002 to 2011. This enabled the identification of individual indicators and outcomes used in research examining nurse-sensitive patient outcomes. It also facilitated knowledge

development by this researcher of how conceptual frameworks were used in this body of literature and identified the methodological approaches used to examine nursing-sensitive patient outcomes.

As a result of this literature review it is evident that there is no established way for measuring the quality and safety outcomes of nursing care. The methodological aspects of this research are presented in the next chapter.

CHAPTER 3: METHODOLOGY

3.1 Introduction

The purpose of this chapter is to present and explain the methodology that has been used within this research project. This chapter explores the approach taken by the researcher to answer these questions and includes discussion of the ontological, epistemological and methodological approaches that have framed the development of the study design, analysis and findings within the project. The discussion will include how pragmatic decision making has been used to ensure that the research questions have been the focus of the study design. The choice of a multi-phase, mixed methods design using the philosophical lens of constructivism to interpret the qualitative components of data collection and analysis, and post-positivism to interpret the quantitative components of data collection and analysis is described. The ethical considerations and approaches used to ensure rigour in research design, data collection, data analysis and interpretation is outlined. This chapter concludes with a summary of the research design to demonstrate how the multi-phase, mixed methods design has been developed and integrated within this project. Each of the three phases of the project is then described sequentially in Chapter 4, Chapter 5 and Chapter 6.

3.2 Background

As discussed in Chapter 2, there is a large volume of research that examines the impact that nurses and nursing care have on patient outcomes. There is a strong history of programmatic research on this topic by prominent and influential nurse researchers. Much of this focuses on measuring patient safety. There is an equally large volume of research conducted by nurses involved in frontline delivery of care that examines one or more outcomes of their care. Despite the abundance of research on this topic, there was no consensus agreement in the literature on what components of nursing care should be measured and no universal approach about how it should be studied. The absence of this agreement led to development of the over-arching research question:

How can nursing's contribution to patient outcomes be measured?

The specific research questions in this project were developed following analysis of the literature. It was evident following the literature review that patients and their perceptions of the quality of nursing care should be a central tenet of research on this topic. The principles of person-centred care and caring were identified as important but infrequently studied. Communication between the nurse and the patient, between nurses in a ward or unit, and between nurses and all other health professionals were also infrequently studied. In addition, most studies did not examine the positive role that nurses have on patient outcomes but instead were negative in orientation examining adverse events and the absence of care as outcome measures.

Conceptual frameworks were used infrequently to guide study design and knowledge creation within this body of literature. When a conceptual framework was used, Donabedian's structure, process and outcome model was the most frequently cited. Despite use of Donabedian's model, many who used it did not measure processes of care and as a result structural measures and outcomes were frequently combined to form conclusions on the topic. This meant that in these studies, there were limited linkages between nursing interventions and nursing outcomes; and consequently, the ability to conclude that the outcome occurred as a result of the nursing intervention that was being studied was diminished.

In addition to these characteristics, there was no evidence of any previous attempt to ask consumers or front-line nursing staff about what they believe constitutes the outcomes of nursing care and how it should be measured in a comprehensive way. This research sought to overcome this by ensuring that patients and frontline nursing staff guided data collection and that their views on the topic were central to the conceptual framework and indicator set that has been developed. To ensure this approach was successful a series of research questions was developed.

The research questions posed within this project build on each other and have been used to guide study design, data collection and data analysis throughout the multiple phases of this project. There are a number of ways that these research questions could be approached. Walsh states:

> "Research is about knowing, understanding and exploring the world in which we find ourselves. There is no one privileged way of doing this. The approaches we currently possess are but windows that frame our view of this world but also limit what we can see. We should not think that our window is the only one, or indeed, our view the best" (Walsh 2011, p. 10).

In this quote, Walsh (2011) acknowledges that there are no right, or wrong ways, of developing knowledge and understanding about a research problem. The world views or paradigms that a person possesses, influence how they conduct research, but also how they interpret the findings. It is evident, therefore, that paradigms also influence the questions that a researcher will pose and the methods they use to answer them (Morgan 2007). It is therefore important to ensure that the influences of paradigms on research design are made explicit.

3.3 Paradigms and reflexivity

A paradigm as described by Guba and Lincoln (1998, p. 200) "may be viewed as a set of basic beliefs that deal with ultimates or first principles. It represents a worldview that defines, for its holder, the nature of the world, the individual's place in it and the range of possible relationships to that world and its parts". A paradigm can also be described as a world view that has distinct elements including epistemology (how we know what we know), ontology (the nature of reality), axiology (our values) and methodology (the process of research) (Hanson et al. 2005). Researchers who hold different world views will approach research problems in different ways. These different world views (or paradigms) will result in differences in how we construct knowledge; how we interpret information; and our values and methodological choices within the research process itself (Morgan 2007).

A researcher has a significant role in the research process, and as a result the researcher needs to be aware of their ontological, epistemological and methodological beliefs. The researcher's beliefs guide their action and as a result it is important that researchers critically reflect on themselves as the person conducting the research (Guba & Lincoln

2005). This process is labelled ‘reflexivity’ (Guba & Lincoln 2005, p. 210). The next few paragraphs will explore this researcher’s world-view.

The knowledge that I brought with me into the research process was gained through my experiences as a nurse in clinical, managerial and educational roles. This knowledge was built over two decades and encompasses a multitude of different nursing roles and contexts. My understanding of the role of the nurse and nursing generally has expanded over this time and the impact of nursing care on quality and safety outcomes for patients has been a focus of my interest throughout my nursing career. My experiences as a nurse and my education have developed my epistemology (my ways of knowing).

I have observed throughout my career that nurses and those they nurse often have different and varying opinions about nursing and how it should be performed. I have at times asked individuals to explain their beliefs about nursing and the role of the nurse and I have always been struck by the variations in individual responses. My view of nursing is that it is a caring act, it aims to keep the recipients of nursing care safe, well informed, and that nurses should empower the individual recipients of their care to make informed decisions about that care and healthcare experience. I also believe that every nurse should aim to provide the best possible care they can to the patients they are caring for. This is my ontology. However, I have, over time, recognised that my view is subjective and that there is no one universally held view of nursing by nurses.

When I began this research project, I was a consumer of research. I had not previously undertaken any research and was not wedded to any particular paradigm, methodology or research method. In this research project, the main focus of the researcher was in answering the research questions. The multiple aims of the research and the nature of the research questions did not lend themselves to a positivist approach, as a search for one or more *truths* or *facts* was unlikely to occur (Clark 1998). Instead a pragmatic decision was made to use the most appropriate methodology and methods to answer the research questions.

3.4 Research approach

As with all good research, the first consideration when deciding on the methodology of a research project is to ascertain which approach will best suit the research question or questions (Doyle, Brady & Byrne 2009). When planning the research design for this project, it became apparent to me that no single methodology, or method, could be used to answer the questions that had been posed. It may have been possible at that point in time, to modify the research questions to simplify the research project; however, this was not considered, as the primary objective was to answer what are important questions about how we can measure the quality and safety outcomes of nursing practice.

This meant that a mixed methods approach was adopted within this project. Mixed methods research has been defined as:

> "… the type of research in which a researcher or team of researchers combines elements of qualitative or quantitative research approaches (e.g. use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) for the purposes of breadth and depth of understanding and corroboration" (Johnson, Onwuegbuzie & Turner 2007, p. 123)

This definition highlights the mixing of different types of data, analysis and inference techniques for the purpose of building understanding and knowledge about a research problem. Given the complexity of the research problem addressed within this research, a mixed methods approach seemed to provide the greatest opportunities for answering the research questions. It also became apparent that multiple methodologies were required to make meaning of the different data and develop inferences from and between the different data sources.

Creswell and Plano Clark (2011) describe four worldviews that inform the practices of mixed methods research. They are: post-positivist; constructivist; participatory; and pragmatist. They summarised the basic characteristics of these four world views and this is presented in Table 3.1

Table 3.1: Basic characteristics of the four worldviews used in mixed methods research (Creswell & Plano Clark 2011, p. 40)

Post-positivist Worldview	Constructivist Worldview	Participatory Worldview	Pragmatist Worldview
Determination	Understanding	Political	Consequences of actions
Reductionism	Multiple participant meanings	Empowerment and issue oriented	Problem centred
Empirical observation and measurement	Social and historical construction	Collaborative	Pluralistic
Theory verification	Theory generation	Change oriented	Real-world practice oriented

Creswell and Plano Clark (2011) assert that each of these worldviews provide a general philosophical orientation to research and that within mixed methods research they can be combined or used in isolation.

While pragmatism is frequently promoted as the dominant worldview within mixed methods research, there is still much discussion and debate on the *best* paradigm and how it should be chosen (Creswell et al. 2003; Greene, Caracelli & Graham 1989; Teddlie & Tashakkori 2009). Pragmatists advocate "a needs-based or contingency approach to research method and concept selection" (Johnson & Onwuegbuzie 2004, p. 17), so that researchers are free to determine what works to answer the research questions (Doyle, Brady & Byrne 2009). Methodological pragmatists such as Tashakkori and Teddlie (1998) and Johnson and Onwuegbuzie (2004) argue that researchers should use whatever methods are needed to obtain the optimum results even if this involves switching between alternative paradigms. Instead of methodology being important, the research problem is of primary importance and researchers use the most appropriate methodological approach to understand the problem and answer the research questions. In keeping with this approach, this research used pragmatic decision making in choosing methodology and methods. It did not adopt the pragmatist worldview.

3.5 Choosing a mixed methods research design

Mixed methods research has been classified into six major designs: the triangulation design; the embedded design; the explanatory design; the exploratory design; the transformative design; and the multi-phase design (Creswell & Plano Clark 2011).

The research described in this thesis can be described as a multi-phase, mixed methods research design. Creswell and Plano Clark (2011, p. 100) state that multi-phase designs are suited to research that involves an "iteration of connected quantitative and qualitative studies that are sequentially aligned, with each new approach building on what was learned previously to address a central programme objective". The purpose of multi-phase designs are to address a set of incremental research questions that advance a programmatic research objective, and as a result this design is well aligned with the aims of this research project. A multi-phase design also provides an overarching methodological framework that is well-suited to this research project.

The philosophical assumptions that provide the foundation for a multi-phase design can vary depending on the specifics of the design (Creswell & Plano Clark 2011). In this project, qualitative components of the project have been undertaken within a constructivist worldview. Quantitative components have been undertaken using a post-positivist worldview. As previously discussed, mixed methods research can enable more than one paradigm to be adopted and Creswell and Plano Clark (2011) recommend the combination of constructivism and post-positivism for mixed methods research that has sequential phases inherent in its design.

Designing a mixed methods study and the individual phases within a multi-phase mixed methods study can be a challenging process. Creswell and Plano Clark (2011) describe four key principles for researchers to consider when planning a mixed methods study. The four principles are: using a fixed and / or emergent design; identifying a design approach to use; matching the design to the study's problem, purpose and questions; and being explicit about the reason for mixing methods. These four principles are presented in Table 3.2, along with a description of how these principles were addressed within this research study.

Table 3.2: The key principles for designing a mixed methods research study and how they were considered in this research study.

Principles for designing a mixed methods study	In this research …
Using a fixed and / or emergent design	A fixed approach was adopted for the initial two phases of the research. The design of the final phase was emergent and was informed by the findings from the initial phases of the project.
Identification of a design approach to use	A multi-phase design was chosen. The rationale for choosing this particular design has been previously outlined.
Matching the design to the research problem, purpose and questions	A multi-phase design enabled individual research questions to be explored in specific phases of the study.
Being explicit about the reasons for mixing methods	Bryman (2006) provided a detailed list of reasons why researchers would use mixed methods. Based upon Bryman (2006), this research utilised mixed methods for the following reasons: – Triangulation; – Completeness; – Explanation; – Context; and – Instrument development.

Building on from these four principles, Creswell and Plano Clark (2011), describe four important decisions in choosing the most appropriate study design. These decisions relate to the different ways that the quantitative and qualitative strands of the research apply to each other within the overall study. For the purpose of this discussion, a strand is a component of a study that encompasses the basic process of conducting quantitative or qualitative research: posing a question, collecting data, analysing data and interpreting results based on that data (Teddlie & Tashakkori 2009). The four important decisions relate to the level of interaction between the strands; the relative priority of the strands; the timing of the strands; and how the mixing of different strands will occur (Creswell & Plano Clark 2011). These four important decisions are presented in Table 3.3, along with a description of the outcomes of these decisions within this research study.

Table 3.3: The important decisions in choosing a mixed methods design and the outcomes of these decisions within this research study.

Important decisions in choosing a mixed methods design	In this research …
Level of interaction between quantitative and qualitative strands	All phases are interactive. Each phase builds on the next phase. In Phase 2 and Phase 3, the quantitative and qualitative strands are mixed.
The priority of quantitative and qualitative strands	The relative importance of different strands varies in the different phases: – Phase 1: Qualitative; – Phase 2: Equal priority; – Phase 3: Equal priority.
The timing of quantitative and qualitative strands	Phase 1 used a predominately qualitative focus for data collection and analysis. Phase 2 used concurrent collection of both quantitative and qualitative data and Phase 3 used qualitative data collection and then analysed this data using predominately quantitative methods.
Determining where and how to mix the quantitative and qualitative strands	Phase 1 involved the conversion of qualitative data into a quantitative survey. Phase 2 involved the mixing of data in collection and analysis. Phase 3 involved the transformation of qualitative data into quantitative data and then the interpretation of this data.

There are a number of advantages of using a multi-phase, mixed methods research design. These include the flexibility inherent within the design; the ability for researchers to conduct multiple iterative studies over multiple years; and the ability for researchers to publish results from individual components of the studies while at the same time contributing to the overall programme of research (Creswell & Plano Clark 2011).

There are also some inherent challenges in using multi-phase designs. They include: anticipating the challenges associated with individual concurrent and sequential approaches within individual and subsequent phases of the project; identification of

sufficient resources, time and effort to implement several phases over multiple years; and consideration of how to meaningfully connect individual phases and how to mix quantitative and qualitative strands within and between phases (Creswell & Plano Clark 2011). In addition to these challenges, I would also identify the challenge for the researcher in developing the knowledge and skills to use multiple methods and multiple methodologies within the one overall research project.

3.6 Ethical considerations in conducting this research

Ethical approval for conducting this study was obtained from the Human Research Ethics Committee of the University of Wollongong in New South Wales, Australia. Documentation from the Human Research Ethics Committee of the University of Wollongong is included in Appendix 2. Ethical approval was also obtained from the health service region where elements of the research were undertaken: the South Eastern Sydney and Illawarra Area Health Service (SESIAHS), New South Wales, Australia. Documentation from the SESIAHS is included in Appendix 3. This research was categorised as negligible risk research where there is no foreseeable risk of harm or discomfort and any foreseeable risk is no more than inconvenience (NHMRC 2007).

The principles of respect for human beings, research merit and integrity, justice and beneficence (NHMRC 2007) were used to consider the ethical issues in this research. As a result the ethical considerations were: consent; privacy and confidentiality; ability to withdraw; and inconvenience/discomfort. The processes used to ensure that the above principles were considered when planning, conducting and analysing this research project, are explained within each of the chapters that describe the study design and findings for each phase of the research.

3.7 Approaches to ensuring rigour in research design, data collection, data analysis and interpretation

This research project has collected and analysed quantitative and qualitative data in a multi-phase, mixed methods design. The type of data collected has been used to

determine the most appropriate method of ensuring rigour. As a result, the concept of validity has been used to consider the research design, data collection, data analysis and interpretation of findings for quantitative data. The concept of trustworthiness has been used to consider the research design, data collection, data analysis and interpretation of findings for qualitative data.

3.7.1 Quantitative data and the concept of validity

Validity is an overall evaluative judgement about whether a study or a specific instrument, measures what it sets out to measure (Messick 1995). Validity relates to the degree to which inferences made in a study are accurate and well founded (Polit & Beck 2010). Validity is measured on a continuum and as a result, a study reflects the degree of validity of the study, rather than whether validity exists (Polit-O'Hara & Beck 2006). Validity can be discussed in relation to two criteria: internal validity; and external validity.

3.7.1.1 Internal validity

There are three approaches for assessing internal validity. They are: content validity; criterion-related validity and construct validity. Content validity is concerned with the relevance and representativeness of items or concepts to the intended setting (Roberts, Priest & Traynor 2006). Criterion-related validity relates to a specific instrument or items within an instrument and compares that data with other validated measures of the same concept or phenomenon (Roberts, Priest & Traynor 2006). Construct validity involves assessment of whether inferences about the items or concepts being examined actually measure the higher-order constructs relevant to them (Polit & Beck 2010).

3.7.1.2 External validity

External validity is concerned with generalisation of results to and between particular people, settings and times (Higgins & Straub 2006). It is sometimes described as *generalizability*.

3.7.1.3 Reliability

Reliability is concerned with the extent to which an instrument used in research is stable, consistent and accurate (Polit & Beck 2010).

3.7.2 Qualitative data and the concept of trustworthiness

Trustworthiness was first described by Lincoln and Guba in 1985. Since that time it has frequently been used as an overarching concept for exploring rigour in qualitative research. Lincoln and Guba (1985) identified four criteria that research should meet for it to be deemed to be trustworthy: credibility, dependability, confirmability, and transferability. These criteria should be considered from conception of the research all the way to data interpretation and reporting on findings. These criteria were used to ensure trustworthiness of the findings in all qualitative phases of this project. An explanation of each criterion is outlined in the next section and the specific processes used in each phase of the project are explored in the respective chapters.

3.7.2.1 Credibility

Credibility relates to procedures used to accurately record the phenomenon being studied (Shenton 2004). Strategies to ensure credibility require the researcher to design the study, collect data, analyse data and then interpret data using procedures that minimise the risk of presenting inaccurate or inconsistent information as part of the findings. Lincoln and Guba (1986) identified six specific processes that can be used to assist in assuring credibility. Table 3.4 provides a summary of these six processes.

Table 3.4: Processes for assuring credibility in qualitative research

(Lincoln & Guba 1985; Lincoln & Guba 1986)

Processes for assuring credibility	Summary of Guba and Lincoln's description of how to operationalise these processes
Prolonged engagement	Prolonged engagement involves investment of "sufficient time" to ensure that the researcher meets their primary objective (Lincoln & Guba 1985, p. 301). It involves awareness of "potential distortions" to data quality including the researchers own role in the study (Lincoln & Guba 1986, p. 77). Prolonged engagement can also facilitate the ability of a researcher to build trust with participants.
Persistent observation	Persistent observation occurs alongside prolonged engagement and enables the researcher to develop understanding of the important concepts being studied. It enables context to be understood and the most important factors involved in the phenomenon to be identified.
Triangulation	Triangulation involves a process of "cross-checking data" through use of different sources, different methods and different researchers (Lincoln & Guba 1986, p. 77).
Peer debriefing	The process of peer debriefing involves exposure to a disinterested colleague about critical components of the study. This process aims to "keep the inquirer honest" through in depth discussion of decisions and actions about design, data collection and analysis, and interpretations of findings (Lincoln & Guba 1985, p. 308).
Negative case-analysis	Negative case-analysis involves searching for alternative or disconfirming views during data analysis to ensure that all perspectives are considered and explored in relation to interpretation of findings
Member checking	Member checking involves a process by which data, analytic categories, interpretations and conclusions are tested with the people involved in data collection for the purpose of ensuring that accurate assumptions have been made during data collection, analysis and interpretation (Lincoln & Guba 1985). Member checking is a continuous process and can be both formal and informal.

3.7.2.2 Dependability

Dependability requires the researcher to provide enough details about the procedures used in the study that it could be replicated by another researcher in a process that has

been described as “stepwise replication” (Lincoln & Guba 1985, p. 317). Lincoln and Guba (1985) do not suggest that replication of a study should occur but that it should be described in such a way that it could be considered as a “prototype model” (Shenton 2004, p. 71) for others to follow and for the reader to assess if appropriate research practices have been used.

Lincoln and Guba (1985, p. 317) also advocate using an “audit trail” to enhance dependability. Lincoln and Guba (1986) identify that the components of the audit that relate to the research process help to determine dependability and those parts of the audit that relate to the product or outcome of the research (data and findings) relate to confirmability.

3.7.2.3 Confirmability

Confirmability relates to the ability of the researcher to objectively identify findings from the experiences and ideas of participants (Lincoln & Guba 1985; Shenton 2004). It is important for the researcher to be aware of, and disclose their own beliefs and assumptions and ensure that these beliefs don’t unduly influence the outcome of their research. This involves using reflective commentary in describing the research. An audit trail should also be used to assist in assuring confirmability (Lincoln & Guba 1985).

3.7.2.4 Transferability

Transferability is equated with but not identical to the concept of external validity used in evaluation of qualitative research (Lincoln & Guba 1985). Lincoln and Guba (1985, p. 316) describe transferability by describing the responsibility of the researcher to provide the “thick description” necessary to enable someone interested in applying the knowledge gained from their research to another setting. This involves providing a data base of information so that the reader can make judgement about whether the knowledge can be transferred to other settings.

In order to demonstrate how the phases of the research project have been developed and integrated together a summary of the research design is now presented. This summary

focuses on the methods used within the research as a prelude to subsequent chapters. The outcome and significance of the research are not emphasised within this summary.

3.8 Summary of the research design

The aim of this mixed methods research project was to develop a set of indicators for measuring the quality and safety outcomes of nursing work. To achieve this goal, a multi-phase, mixed methods research study was undertaken. In the first phase, qualitative data was gathered from a number of different sources to develop a modified Delphi survey on the important concepts for measuring the quality and safety of nursing work. In the second phase, a modified Delphi survey was then conducted with nurses working in frontline healthcare services. Three consensus rounds of a modified Delphi survey were undertaken to test the importance of the concepts that were identified and to generate new items for consideration in subsequent rounds. At the end of the modified Delphi survey a conceptual framework for measuring nursing practice was proposed. The third phase of the project utilised this conceptual framework to interrogate all the published empirical literature on nursing indicators and nursing outcomes using a template analysis with the important concepts from the modified Delphi survey used as an *a priori* coding template. Following the completion of coding of the published empirical literature, the method used by the authors of these papers to measure each of these concepts, and the broad other category that was also collected, were identified and tabulated. This enabled the measurement tools and / or data definitions used to measure individual concepts to be identified and counted. This data was then used to evaluate each measurement tool to develop an indicator set that measures the quality and safety components of nursing care and provides a means of measuring nursing practice. The *Measure Evaluation Criteria* endorsed by the National Quality Forum (2013) were used to evaluate potential measures. A final set of indicators were then proposed based on this evaluation and the ability of the indicators to measure the concepts described within the final conceptual framework for measuring the quality and safety of nursing practice. A multi-phase, mixed methods research design was used to manage the multiple components of the study and the iterative nature of the study design (see Figure 3.1).

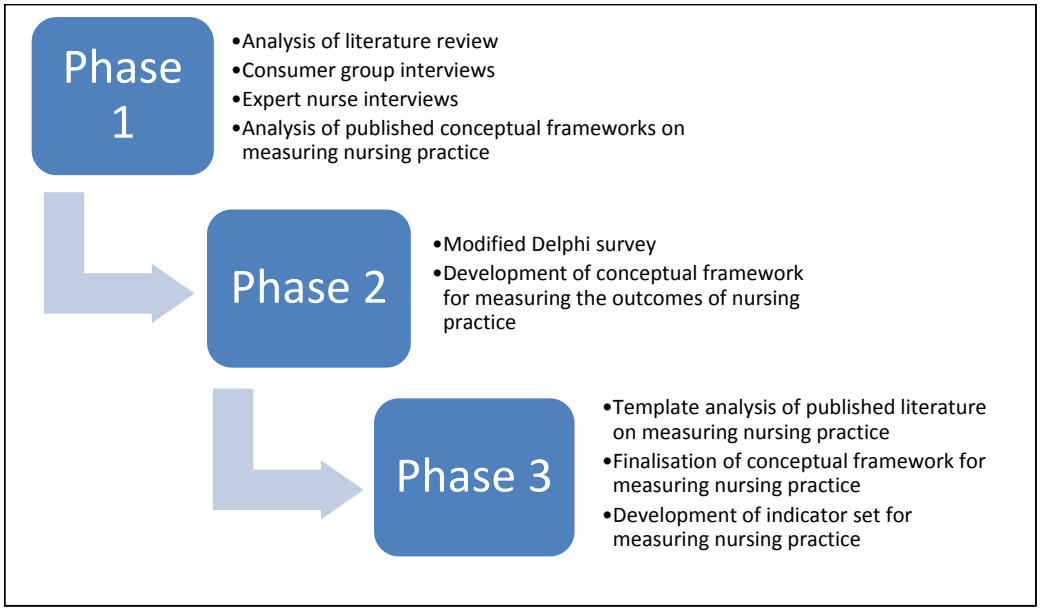

Figure 3.1: Visual illustration of the phases within the research project

3.9 Summary of the chapter

This chapter has provided a description of the methodology that was used within this research project. Explanation, discussion and rationale have been provided for choosing a multi-phase, mixed methods research design. Details have been provided of the ethical considerations applied within the research and the frameworks for exploring rigour in the quantitative and qualitative components of the study have been described. A summary of the research design focusing on the methods used within each of the three phases of the research has been presented. Chapters 4, 5 and 6 now present the research design and findings for each phase of the project.

CHAPTER 4: PHASE 1 - RESEARCH DESIGN AND FINDINGS

4.1 Introduction

This chapter presents and explains the methods and the findings from Phase 1 of this multi-phase, mixed methods research study. This phase of the research addressed the following research questions:

- what are the key elements of quality nursing care from the perspective of patients / consumers?
- what nursing-sensitive outcomes are currently being used in Australia to measure the outcomes of nursing practice?
- what conceptual frameworks are used to guide the measurement of nursing-sensitive outcomes in research and practice?
- what concepts should be considered when measuring the outcomes of nursing practice?

This chapter begins with a description of the research approach, the methodology and the specific research methods used in this phase of the research project. The ethical considerations relevant to the research are then outlined. This phase of the research project involved data collection and analysis from four different sources of data. The data sources were: the literature on nursing-sensitive patient outcomes; group interviews with healthcare consumers; interviews with expert nurses who had published on nursing-sensitive patient outcomes; and the published conceptual frameworks used in the literature to examine or describe nursing-sensitive outcome measures. The sampling, data collection and data analysis procedures, and the findings for each of the four different components of the research, are described within the chapter. The procedures used to ensure rigour within the research are then presented. The chapter concludes with a description of how data from each of the four data sources was integrated and developed into the first iteration of the conceptual framework for measuring the impact of nurses and nursing practice on patient outcomes. How that conceptual framework was used to begin Phase 2 of the research project is then described.

4.2 Research Approach

Phase 1 of this research project, used a qualitative approach in the constructivist paradigm to identify and develop an understanding of the important concepts in measuring the outcomes of nursing practice. The constructivist paradigm respects that people, in the case of this research, our patients and nurses, create knowledge based upon their own perspective. Within the constructivist paradigm, reality is not seen to be objective and universally shared, but rather a construction based upon the beliefs that a person holds about an event and the meaning assigned to that event (Brown 2005). The constructivist paradigm recognises that individual people will have different opinions on how the safety and quality of nursing care can be conceptualised and measured. It was considered that through recognition of the subjectivity of this knowledge, the opinions of a number of different groups of participants could be used to develop a more comprehensive understanding of how the quality and safety of nursing care could be measured.

4.3 Methodology

This descriptive research project used qualitative methods to build knowledge and understanding about the important concepts involved in measuring nursing practice. Multiple sources of data were used to enable triangulation to occur. The data sources were: people who had been the recipients of nursing care; expert nurses who had published on measuring the outcomes of nursing care within Australia; and the existing literature on measuring nursing outcomes. This phase was thus designed to ensure that the recipients of nursing care were included in the project and that their perspective was visible in the data analysis and focus of the research findings. This is in contrast to most research on this topic that presents the perspectives of nurses in isolation from the recipients of their care. The end-point of Phase 1 of the project was the development of a modified Delphi survey that was used in Phase 2 of the research project.

4.4 Methods

Phase 1 of this project used qualitative data collection, thematic analysis and inductive reasoning to develop a list of important concepts for measuring nursing practice. A summary of the study design for this phase of the project is represented in Figure 4.1.

This diagram illustrates that this phase of the project included a number of different processes that occurred sequentially and/or concurrently.

The research questions for this phase of the project have already been stated. Each of these questions builds on another. The research questions were used to guide study design, data collection and data analysis throughout this phase of the research project. A description of how each research question was linked with data sources and methods and the justification for these decisions is described in Table 4.1. Alternate data sources and methods for each question are also outlined in Table 4.1.

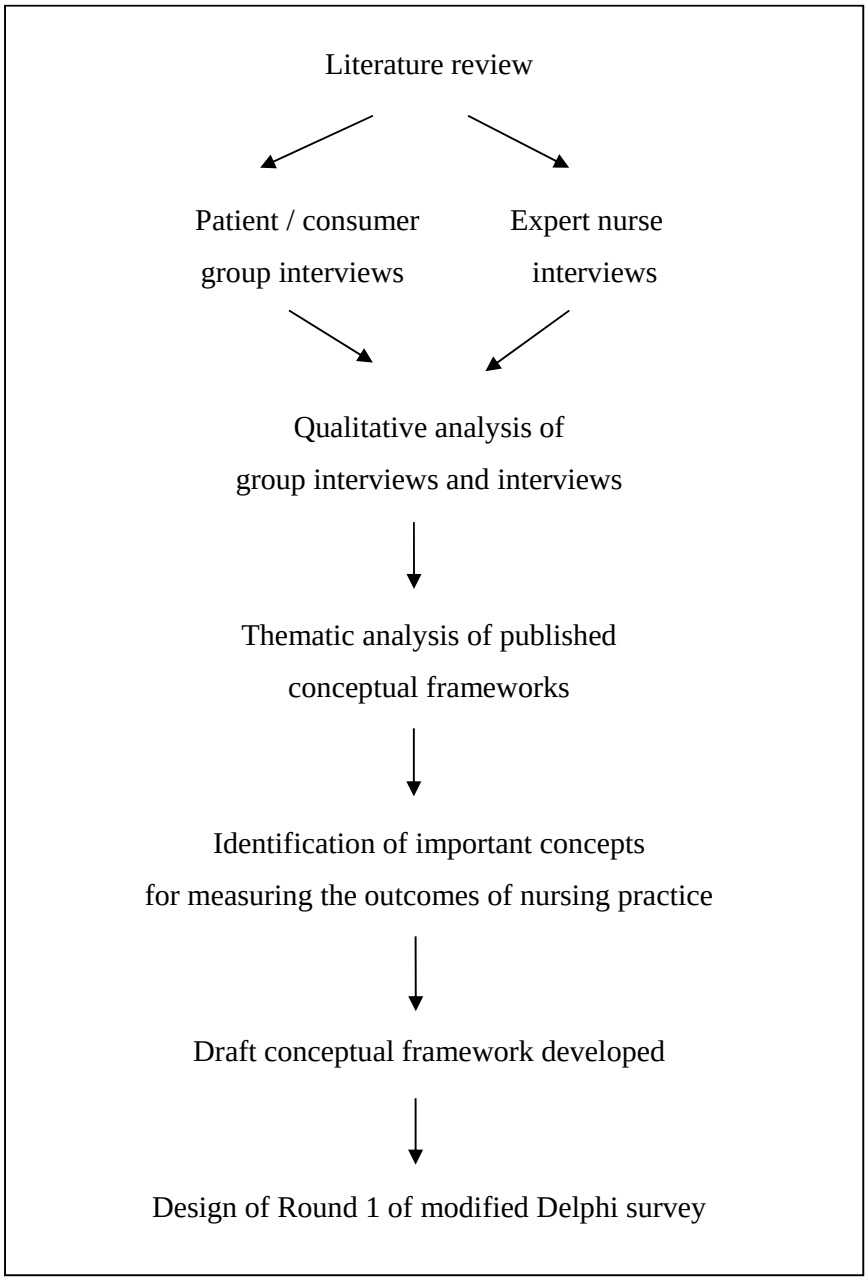

Figure 4.1: Phase 1 study design

Table 4.1: Identification of data sources and method for individual research questions within Phase 1 of the research project

Research questions	Data sources and methods	Rationale
• What are the key elements of quality nursing care from the perspective of patients / consumers?	• Healthcare consumers: interviews / group interviews Also considered: • Healthcare consumers: focus groups • Healthcare consumers: survey	• Interviews and group interviews provided an appropriate format for the recipients of nursing care to express their experiences of nursing care. This enabled understanding of their experiences of care to be shared and understood and the meaning of quality nursing care to be analysed from the experience of someone who has been nursed. It ensured the *voice* of the nursed was present within the data so that this could be incorporated throughout the project. • Focus groups were not utilised as collective agreement (or consensus) was not the sole aim of this data collection process. • Neither a quantitative survey nor a qualitative survey was thought to be able to guarantee a broad spectrum of experiences to be captured and ensure that pre-existing thoughts or theory did not influence knowledge development.
• What nursing-sensitive outcomes are currently being used in Australia to measure the outcomes of nursing practice?	• Expert nurses: interviews Also considered: • Analysis of existing literature: integrative or systematic review	• Interviews with expert nurses who had published on this topic in Australia provided accounts of how nursing outcomes are being used in Australia. • Literature from Australia was identified but utilisation of this method would only enable published literature to be evaluated. Based upon the limited number of studies published, discussion with experts was deemed to be more appropriate so that both published and unpublished information could be identified.
• What conceptual frameworks are used to guide the measurement of nursing-sensitive outcomes in research and practice?	• Expert nurses: interviews • Published conceptual frameworks: content analysis Also considered: • Analysis of existing literature: integrative or systematic review	• Interviews with expert nurses who had published on this topic in Australia provided accounts of the conceptual frameworks that have been used to guide measurement of nursing-sensitive outcomes in research and practice. • All published conceptual frameworks that were described or used in the literature were identified. Content analysis of all of these frameworks enabled their characteristics and assumptions to be analysed and considered as an additional source of data. • An integrative review of all published conceptual frameworks may form part of post-Doctoral research.
• What concepts should be considered when measuring the outcomes of nursing practice?	• All methods used in this phase of the study	• A comparison of similarities and differences in the data yielded from the different sources enabled a list of the most important concepts to be generated and developed into the modified Delphi survey in Phase 2 of the project. A draft conceptual framework was also developed to reflect the thinking and understanding at this point.

4.5 Ethical considerations in Phase 1 of the research

Within this phase of the project, interviews were conducted with two distinct groups of people: people who had been the recipients of nursing care; and expert nurses who had published on measuring the outcomes of nursing care within Australia. The ethical considerations of consent, privacy and confidentiality, ability to withdraw, and inconvenience/discomfort will be discussed as they relate to Phase 1 of the project.

4.5.1 Consent

All participants volunteered to be included in the study and were given a participant information sheet and consent form prior to the scheduled data collection. A signed copy of the consent form was obtained from each participant prior to the commencement of data collection.

4.5.2 Privacy and confidentiality

Each participant was assured that their identity would not be revealed in reports of the study and participants involved in group interviews were asked to maintain confidentiality of the identities of group members and content discussed. The anonymity of participants was protected in all documents related to the study and any information linking participants to data were stored electronically and password protected. The audio recordings of interviews (and any transcripts developed from them) have been reviewed only by the researcher and the project supervisors.

4.5.3 Ability to withdraw

Participants involved in group interviews were able to withdraw from the interview at any time but were informed prior to the interview commencing that their contribution to data collection could not be withdrawn as it was part of a group process. Participants involved in individual interviews were able to withdraw themselves and their data at any point in time. Despite these provisions no participant withdrew from any interview.

4.5.4 Inconvenience / discomfort

All participants volunteered to be included in the study. The participant information sheet outlined that there were no foreseeable risks to participants and apart from the time involved in participating there was no inconvenience.

4.6 Sample

The participants in this phase of the research project came from two specific population groups. The sampling procedures, why participants were chosen and how they were enrolled in the project is explored within this section.

4.6.1 The health consumer group interviews

The health consumer group interviews consisted of a purposive, non-probability sample of individuals who had been the recipient of nursing care in the last 10 years. Interviewing this group of participants enabled their experiences of care to be shared and understood and the meaning of quality nursing care to be analysed from the experience of someone who had been nursed relatively recently. One of the principal reasons for including data from consumers of healthcare was to ensure the *voice* of the nursed was present within the data so that this could be incorporated throughout the project. Participants were recruited through distribution of a flyer and an information sheet to the Consumer Advisory Panel of an Area Health Service within NSW, Australia. This particular group was chosen because it contained a broad range of participants who demonstrate an active interest in healthcare services through their voluntary participation in such a community group. The stipulation of having been the recipient of nursing care in the last 10 years ensured that the group would be able to discuss their experiences and perceptions of the role and function of nurses and the outcomes of nursing care from a patient centred perspective from within their recent memory.

Initially, the aim was to interview up to 15 people. This number was thought to be sufficient to identify important concepts and themes and to ensure that the project included the perspectives of the individuals who have been the recipients of nursing

care. This phase of data collection was not intended to be exhaustive or necessarily reach data saturation. Sandelowski (2000) would classify it as qualitative description where the researcher aims to provide a comprehensive summary of an event in the everyday terms of that event. The aim of the consumer group interviews was to ensure that the project included the perspectives of patients and consumers of healthcare.

4.6.2 The expert nurse interviews

The expert nurse interviews consisted of a purposive non-probability sample of nurses who worked in Australia and had published in a peer-reviewed journal on the subject of nursing outcomes or nursing quality over the previous 10 years. Interviewing this group of participants enabled data to be gathered on how nursing outcomes are being used in Australia. It also enabled data on the use of conceptual frameworks for collecting evidence regarding nursing outcomes to be identified and to assist the researcher to expand upon and enhance her understanding of conceptual frameworks related to nursing-sensitive outcomes. A level of expertise is required to enable this type of theory development and testing, and because of this, individuals who had published in peer reviewed journals were approached. Potential participants were identified by an electronic database search in CINAHL and MEDLINE, for articles published in peer reviewed journals by nurses in Australia within the last 10 years that contained the keywords of ‘nursing outcomes’ and / or ‘nursing quality’. A total of twelve potential participants were identified and participants were invited to participate via an email introduction.

4.7 Data collection and data analysis procedures

Data from four different sources were collected and analysed within this phase of the project. They included:

- analysis of the literature on nursing-sensitive patient outcomes;
- group interviews with health-care consumers related to identifying the contribution that nurses and nursing care make to patient outcomes;

- interviews with expert nurses who had published on nursing-sensitive outcome measures regarding their views on nursing-sensitive outcome measures and how nursing-sensitive outcomes are used in research and in clinical practice; and
- thematic analysis of the published conceptual frameworks used in the literature related to nursing-sensitive outcome measures.

A discussion of how these data were collected and analysed within each of these four components of this phase of the project is now presented.

4.7.1 Literature on nursing-sensitive patient outcomes

Phase 1 of the research commenced with a comprehensive review of the literature and used the same search strategy identified in section 2.2. The literature was reviewed to:

- identify nursing-sensitive outcomes used in research and practice
- determine the conceptual models used to describe nursing-sensitive outcomes
- identify significant contributions made by researchers on the development and use of nursing-sensitive outcomes in clinical practice.

The literature on nursing-sensitive outcomes was analysed to identify how nursing-sensitive outcomes were used in research and practice. As discussed in Chapter 2, this analysis enabled the key characteristics of this body of knowledge and any gaps in the literature to be identified. This literature review also enabled the conceptual frameworks that have been used to inform the measurement of the outcomes of nursing care to be identified. In addition, the interview guides for the consumer group interviews and the expert nurse interviews were developed based upon the researcher's analysis of the literature and the gaps which emerged within it.

4.7.2 Group interviews with consumers

After the literature review had been conducted, an interview guideline for the consumer group interviews was developed. The interview guideline was pilot tested with a group of volunteers from the Nursing Development and Research Unit at a local healthcare facility. All participants in this pilot testing volunteered to participate. Participants were

given information sheets and signed a written consent form prior to the interview commencing. Participants provided feedback on the structure and wording of questions as well as on the skills of the researcher in asking questions and facilitating discussion. The pilot testing also enabled the audio recording equipment to be trialled. As a result of this pilot test an 'introduction' question was developed to assist participants to build rapport and establish a comfortable and trusting environment with the researcher and within the group. Clearer directions and use of a whiteboard was initiated in two specific questions (questions 4 and 5). No data from this pilot testing was included within data analysis for this project. This process of pilot testing thus assisted the researcher in the development of the interview guideline as well as to develop skills and confidence in qualitative open-ended interviewing techniques.

Following this pilot testing, two group interviews with consumers were conducted in July 2011. A participant information sheet was given to all participants and written consent was obtained from all participants prior to the interviews commencing. The participant information sheet and the consent form are included as Appendix 4 and 5 respectively.

The two group interviews lasted one hour and ten minutes and two hours respectively. A total of seven people participated, and a list of the questions asked within the interviews can be found in Appendix 6.

Each group interview was digitally recorded and extensive field notes were made at the end of each of the interviews. The audio recordings of each group interview were listened to many times and when the main areas of interest were identified; those sections were transcribed. This approach is in keeping with advice from King and Horrocks (2010) and Halcomb and Davidson (2006). For these group interviews, audio recordings and field notes were used to create memos that summarised the data, and verbatim quotes were transcribed when codes were created and themes were identified.

The audio recordings, field notes and memos were used to analyse the group interviews using guidelines developed by Braun and Clarke (2006) for thematic analysis. Thematic

analysis is a method used for identifying, analysing and reporting patterns within qualitative data and has six phases (Braun & Clarke 2006):

1) Familiarising yourself with your data;
2) Generating initial codes;
3) Searching for themes;
4) Reviewing themes;
5) Defining and naming themes; and
6) Producing the report.

Table 4.2 describes the process used in this research for analysing the data from the consumer group interviews.

Table 4.2: Braun and Clarke's (2006) phases of thematic analysis and how they were applied in the analysis of data from the Consumer Group Interviews

Braun and Clarke (2006) 'Phases of thematic analysis'	**In this research ….**
Phase 1: Familiarising yourself with the data	▪ Field notes made after each interview. ▪ Audio-recording of each interview listened to several times. Notes made on each interview based on: - capturing a sense of the whole; - general impressions of structure, processes, format and outcomes; and - general thoughts about what was gained from the interview related to the research topic.
Phase 2: Generating initial codes	▪ Audio recordings listened to again. Comprehensive notes made about concepts explored in each question. Some verbatim quotes captured. Coding of data for each question. ▪ Hierarchical coding structures created. ▪ Audio recordings reviewed again. Additional notes and verbatim quotes captured. Further coding of data undertaken. ▪ Categories and sub-headings reviewed to remove repetition. ▪ Each audio recording reviewed again to ensure all relevant data was coded into categories and sub-headings. ▪ Coded data (in the form of verbatim quotes and notes from each question) identified and collated together.
Phase 3: Searching for themes	▪ Coded data (in the form of verbatim quotes and notes from each question) analysed by categories and sub-headings. ▪ Themes identified. ▪ Initial thematic map developed.
Phase 4: Reviewing themes	▪ Audio recordings reviewed again with notes from interviews to establish how well the categories capture all aspects of the interview. Adjustments to categories made as required. ▪ Audio recordings reviewed by supervisors. Hierarchical coding structure explored; coding decisions verified through listening to relevant section of recordings; verbatim quotes checked for accuracy; overall themes discussed; non-conforming data discussed. ▪ Development of thematic map.
Phase 5: Defining and naming themes	▪ Final thematic map created. ▪ Theme definition developed, including narrative descriptions and supporting quotes. ▪ Names for each theme refined.
Phase 6: Producing the report	▪ Narratives refined and supporting quotes confirmed. ▪ Final review of narrative completed.

4.7.3 Expert nurse interviews

The comprehensive review of the literature conducted within the initial phases of this research project also formed the basis for the development of an interview guide for the expert nurse interviews. The interview guide was pilot tested during a meeting between the researcher and the research supervisors and minor modifications were made to the wording within two of the questions to improve understanding and readability of the questions.

The interviews with expert nurses were conducted between July 2011 and September 2011. Twelve people were invited to participate. Seven participants agreed to participate but one participant subsequently withdrew prior to the scheduled interview due to her workload and her organisational commitments; therefore, no suitable time could be rescheduled. No response was received from the other five potential participants despite numerous attempts to contact them. A total of six interviews were thus conducted.

All participants received a participant information sheet and signed a consent form prior to participating in the interview. The signed consent form was returned to the researcher via email. The participant information sheet and the consent form are included as Appendix 7 and 8 respectively. All participants gave freely of their time and no incentives were used to reward participation.

The six interviews conducted had an average length of forty-one minutes. A list of the questions asked within the expert nurse interviews can be found in Appendix 9.

All the expert nurse interviews were conducted via Skype or via telephone if Skype was unavailable. All interviews were digitally recorded and transcribed verbatim by the researcher. The transcripts, audio recordings and field notes were used to analyse the interviews using guidelines developed by Braun and Clarke (2006) for thematic analysis. A similar approach to that used in thematically analysing data from the health consumer group interviews was undertaken (as outlined in Table 4.2). The main difference between the process used in the health consumer group interviews and the expert nurse interviews was that the latter involved the complete transcription of all interviews and the primary use of transcripts in combination with audio recordings

(rather than just audio-recordings as was the case in the consumer group interviews) to code the data.

4.7.4 Analysis of published conceptual frameworks

The comprehensive review of the literature conducted within the initial phases of this research project provided the primary data source for the analysis of the published conceptual frameworks. This body of literature was examined to identify the published conceptual frameworks that were used to inform the measurement of the outcomes of nursing care. All conceptual frameworks that were described within this literature, or referred to by participants in the Expert Nurses Interviews, were collected as a source of data. Information about the conceptual frameworks in the form of figures and narrative descriptions were retrieved from the published literature that described them. Each conceptual framework was analysed to identify the following attributes within them: major constructs; tenets and assumptions; logical consistency; and the structure, format and presentation of the framework. The data from this analysis was also coded and analysed using Braun and Clarke's (2006) guidelines for thematic analysis.

The approach used to analyse published conceptual frameworks in this project was modified from the approach used by Mitchell et al. (2010) to thematically analyse theoretical models for translational science in nursing. Mitchell et al. (2010) identified 47 distinct models for knowledge translation and analysed the attributes of each model by extracting the purpose; major constructs; tenets and assumptions; logical consistency; generalizability; parsimony and testability; and utility for translational science. Mitchell et al. (2010) then used the data from their analysis to develop a schema for organising the theoretical models for translational science.

In this research project, the data from the analysis of the attributes of each published conceptual framework was integrated with data from the literature review, consumer group interviews and expert nurse interviews. The process of data integration is described later in the chapter.

4.8 Findings

The findings from the first phase of this project are presented in the same four discrete components that were described in section 4.6 (literature on nursing-sensitive patient outcomes; consumer group interviews; expert nurse interviews; and analysis of published conceptual frameworks)

4.8.1 Findings from the analysis of literature on nursing-sensitive patient outcomes

This project began with a comprehensive review of the literature which was described in Chapter 2. Prior to commencing data collection within this phase of the project, a focused analysis of the literature occurred. This analysis served two purposes. The first was to identify how nursing-sensitive outcome measures have been used in research and practice. This process also enabled gaps in the literature and therefore *what is known and not known* to be identified. The second purpose was to enable interview guidelines for the consumer group interviews and the expert nurse interviews to be developed.

As a result of analysing the literature on nursing-sensitive outcome measures several characteristics of the body of knowledge were identified. They were:

there is limited agreement within the literature on a definition of nursing-sensitive outcomes or on which outcome measures could / should be used to measure nursing-sensitive outcomes;

historically, data collection on nursing-sensitive outcomes has relied upon data abstraction from coded medical records and / or administrative databases and / or datasets;

the majority of published literature does not use a conceptual framework that explicitly links nursing work to the outcomes being measured;

when a conceptual framework is used, the predominant framework is Donabedian's (1996), Structure, Process and Outcome model;

most research examines the link between nurse staffing and nursing outcomes;

the majority of research that examines nursing outcomes is focused upon measures of safety;

nursing outcomes that measure safety mostly do so by using adverse events as an outcome measure;
a wide variety of outcome measures and tools are used with varying degrees of methodological rigour.

The main gaps identified within the literature were:
there are limited linkages between nursing interventions and nursing outcomes (this is seen in the relative absence of process measures described within the literature);
limited discussion of the positive contributions of nursing care to patient outcomes;
limited focus on the caring role of the nurse;
limited focus on communication (with patients, other nurses and healthcare team members);
process measures are predominately absent from the literature;
there has been no obvious attempt to ask consumers or front-line nursing staff about what they believe constitutes the outcomes of nursing care and how it should be measured.

As a result of the analysis of the literature, the interview guides for the consumer group interviews and the expert nurse interviews were thus heavily informed by this analysis of the literature. These interview guides were pilot tested and some minor modifications were made to each of the guides prior to conducting the first interviews. The process of pilot testing was described previously in sections 4.6.2 and 4.6.3.

4.8.2 Findings from the health consumer group interviews

The focus of the health consumer group interviews was on building knowledge of what quality nursing care is and how it is identified and valued by individuals who have been the recipients of nursing care. Specifically the consumer group interviews aimed to answer the following research question:

- what are the key elements of quality nursing care from the perspective of patients / consumers?

Due to difficulties in recruiting potential participants, only seven participants took part in the consumer group interviews. Ideally, a larger sample would have been recruited

but despite the concerted efforts of the researcher no additional participants could be identified from the purposive sample that had been approached and authorised within the HREC approval. Because of the concurrent data collection occurring within this phase of the research it was not appropriate to halt the research project in an attempt to recruit additional participants and it was not appropriate to re-visit this process once the first phase of this study had been completed due to the iterative nature of the modified Delphi survey design within Phase 2 of the research project. Despite the limitations of the size of the sample, some repetition of concepts and themes was found, and group agreement on many concepts was achieved during the group interviews.

4.8.2.1 Participant Information

A summary of the group interview participant characteristics is included in Table 4.3. All seven participants contacted the researcher in response to a promotional flyer that was distributed to the Consumer Advisory Panel of an Area Health Service within NSW, Australia. All participants were aged over 65 years. Two participants were male. Two participants were the recipient of nursing care within private healthcare organisations and the remaining five had received care in public healthcare organisations. All participants were either retired or no longer able to work full-time. All participants used English as their first language. The two group interviews lasted one hour and ten minutes and two hours respectively.

Table 4.3: Demographic profile of participants in consumer group interviews (N=7)

Characteristic	Number (n)	Percentage (%)
Sex:		
Female	5	71
Male	2	29
Age:		
Less than 65 years	0	0
65 years or over	7	100
Employed:		
Yes	0	0
No	7	100
Type of organisation where healthcare was received**:**		
Public healthcare organisation	5	71
Private healthcare organisation	2	29

4.8.2.2 Health consumers' perspectives of quality nursing care

The consumer group interviews used semi-structured interviews to gather data. The interview guide is outlined in Appendix 6. The opening interview question asked participants to discuss their experience of being nursed. It was apparent in the discussion that followed this question that participants had a broad range of experiences within the healthcare system and with nursing care. Most participants could describe both positive and negative aspects of the nursing care they received.

The questions 'what contribution did nursing care and nurses make to the outcome of your patient experience?'; 'what would you describe as high quality nursing care?'; and 'are there any aspects of nursing care we can measure?' resulted in a range of answers that revealed participants' views about the role nurses have in the outcomes experienced by patients as well as potential ways in which nursing care might be measured.

The main themes from this discussion were:

- Ask the patient if they feel ‘cared for’!
- Feeling safe is complex
- Caring should be person-centred
- Nursing knowledge is visible

4.8.2.2.1 Ask the patient if they feel ‘cared for’!

All the healthcare consumer interviewees wanted to be able to provide feedback on the quality of nursing care they received. All participants agreed that they could provide feedback on the care they received and that this could be done by using a survey with a rating scale and that the important elements of care should all be included. Much discussion was held on what these *important elements* are. The important elements of care identified by one participant were:

> *…the ability to assess what a patient needs, so that is: relieve pain and other symptoms; give comfort; provide a safe environment; and promote healing* [pause] *the ability to anticipate the needs and requirements of that patient* [pause] *organisational skills* [pause] *social skills* [pause] *a genuine desire to give basic nursing care to people in hospital* [pause] *communication skills. (Participant 4).*

All other participants in this group interview agreed with this synopsis.

Participants identified that they wanted to provide feedback on nursing care, as *caring* was seen to be a fundamental component of nursing care. A focus on caring, and the importance of nurses demonstrating caring attitudes and actions was discussed by all participants. The importance of caring is demonstrated in the following quote:

> *… if a nurse is to be seen as caring [pause] which is my definition really of a nurse, somebody who wants to care for somebody and*

> *help them [pause] they've actually got to communicate and be with the patient so if you are in a room either on your own or in a 4 bed ward, and you don't see your nurse, then you don't feel cared for (Participant 3).*

Both groups explored how caring could be measured. One participant suggested the following approach:

> *You could ask how well cared for a patient feels [pause] Does the patient feel secure, safe, are their symptoms relieved [pause] You could have a conversation with your patient – so that I can say how I feel. (Participant 4).*

It is evident from this quote and the general discussion that all participants wanted to be asked about their care and they wanted to be able to provide feedback upon that care. This was explored from the perspective of individual patients and then from the perspective of groups of patients.

When considering how patients could provide feedback on nursing care within a ward or department, participants recommended that they should be asked to provide feedback about the nursing care on the day of discharge or soon after. Participants suggested that their overall view of the nursing care should be measured and that this equates to being able to quantify the *average* care provided. One participant suggested that patients should also be able to rate the best and the worst care so that the full spectrum of feedback is provided. The rating of average, best and worst care is a novel suggestion and not one currently utilised in practice. The use of average and best and worst ratings may provide really useful feedback at ward or unit level especially if patients had the opportunity to provide qualitative data to provide details. The use of best and worst in combination with an average rating may assist in making patient reported outcomes more reliable and eliminate the way an average rating can be swayed by really poor or really good experiences.

4.8.2.2.2 Feeling safe is complex

All participants discussed a requirement to *feel safe* when in hospital. They felt that this was part of good nursing care and it occurred: when nurses spent time communicating with them; getting to know them and their needs as a person; when nurses were knowledgeable and competent; when nurses communicated with others in the healthcare team (including other nurses); and when nurses knew how to respond in an emergency.

Safety as a concept appeared to be complex. Participants used the following words to describe what was involved: "*knowledge and skill*"; "*competence*"; "*communication*"; "*hand hygiene*"; "*crisis management*"; being person-centred when planning and delivering care; and most of all "*treating the patient with respect*". All participants discussed the need to feel safe but it was evident from these discussions that what it means to *feel safe* varied between participants. Understanding what it means to feel safe (from the perspective of patients) is thus an area that requires further ongoing study.

The researcher explored with participants the use of measures of safety such as rates of pressure ulcers, falls and medication errors when evaluating nursing care. The purpose of this discussion was to determine if these existing measures of safety had any meaning for participants. All participants agreed that these concepts provide a valid way of assessing what happens when something goes wrong, either with the patient or with the care provided. It was apparent to the researcher that the language used to describe these types of measures would need to be carefully constructed to ensure that the concepts studied can be understood by healthcare consumers. Participants stated that if things like pressure ulcer rates, numbers of falls and medication errors are described in a way that is too complex then there is a possibility that they could be misunderstood. Discussion about these types of safety measures also included the requirement to ensure that they are being objectively measured and accurate. One participant was concerned that because they believed that some incidents are not reported and documented then this type of data might not be accurate.

Participants also discussed the workload of nurses in different ward or hospital environments. All participants agreed that the number and the experience of the nurses and how different wards work, all impact on the nursing care that a person receives.

This validated for the researcher, the need to collect more than just outcomes data so that any evaluation of nursing care can include some of the variables and confounding factors that can occur. Some examples of data that could achieve this are: overall staffing levels in the ward; numbers of agency staff; and overtime rates. Participants identified that collection of this type of information was important because collecting information about nursing care and its quality is vital, but it is even more important to use it to improve care and sometimes this requires a more comprehensive picture of what is going on in that ward or hospital.

4.8.2.2.3 Caring should be person-centred

Person centred care requires a number of key processes of care. According to McCormack and McCance (2006), these processes include: working with the patient's beliefs and values; engagement; shared decision making; having sympathetic presence; and providing for physical needs.

All participants described in varying ways the concepts of person-centred caring. Participants discussed their experiences in hospital and used the following words to describe them: "*lack of control*"; "*power imbalances*"; "*loss of usual home environment*"; issues of identity; and "*feeling involved*" in their own care. All participants discussed how these experiences were enhanced when nurses communicated with them, involved them in decisions about their care and empowered them to take an active part in their healthcare. When this level of communication, respect and consideration was applied all participants described that they felt safe and well cared for.

One of the participants described their experiences of being hospitalised for a long period of time. To this participant the relationships formed with nurses and the communication that occurred within those relationships became a marker of a *good* nurse. The importance of building relationships is evident in the following quote:

> *Nurses need to relate to me in a way that I am comfortable with, joke with me, get to know me, ask me about my life – they are forming a temporary relationship, not a substitute but like a substitute, for what you are missing out on at home. (Participant 5).*

Another participant discussed their role in their healthcare. This participant described how in the care they received, they were part of the team and how there was shared decision making amongst the team. It is evident from this quote that this participant felt satisfied with the care they received.

> *Good communication, professionalism, everyone aware of what is going on. When you are part of the team, it is all working well. (Participant 1).*

All participants also described the need for nurses to meet their physical needs. Much discussion occurred about the need for nurses to "*get back to basics*". This included discussion on how caring was experienced by participants. In some cases this formed the basis for positive experiences of nursing care but in many anecdotes it was commented on by its absence. This included not having the call bell answered for 1 hour, experiencing extended periods of pain and suffering, lying in a soiled bed for long periods of time, being treated roughly during care and not seeing a nurse at all for an extended period of time. All participants who discussed these negative experiences expressed that this was not "*usual care*" but it was obvious for those individuals that it had a profound effect on their care experience.

It was evident in discussions with participants that "*basic nursing care* [was] *fundamentally important*" to their healthcare experience. The absence of a nurse when needed and the inability of a nurse to find time to provide basic nursing care were significant and disappointing events within participants' healthcare experience. This highlights a dichotomy between what participants felt was important (indeed a vital component of nursing care), and what health service administrators see as aspects of

nursing care and the nursing role that can be performed by unskilled or minimally skilled nurse substitutes so that skilled nurses can perform to their full scope of practice. More data is needed to determine if care provided by minimally skilled staff meets the participant's expectations.

4.8.2.2.4 Nursing knowledge is visible

The knowledge of nurses was discussed by several participants. One participant described how she was surprised at the knowledge that nurses have. It appeared that the knowledge held by the nursing staff and their competence was obvious to her in all interactions with them. This knowledge was visible: in their actions; in how they explained things; in their calmness; and in the way in which each action was part of a routine. This provided her with reassurance.

Another participant described how nursing knowledge is visible. This description resonated with other participants.

> *You can actually see it [knowledge] in how they [nurses] go about things [pause] you can see in their hands how intelligent they are [pause] how they manage their work. (Participant 6).*

For some participants, knowledge, communication and skills were equated with professionalism. Others recognised that nurses must have a knowledge base to recognise error and abnormal situations, and that nurses use their knowledge and assessment skills to keep their patients safe. Others described how nurses are:

> *… able to explain things to you so that you understand them and that is really valuable. (Participant 5).*

4.8.2.2.5 Categorising nursing care: safety; communication; caring; and coordination

During the group interview process, the researcher used a whiteboard to document the different components of nursing care that participants discussed as being measurable. This was an iterative process used throughout both of the group interviews. The measurable concepts identified by participants were: authority; knowledge; experience; listening; quality of attention; honesty; continuity; teamwork; professionalism; application of medical knowledge; confidence / trust; social skills; competence; respect; consideration; and basic nursing care.

At the conclusion of each group interview, participants were asked about how concepts related to measuring nursing care could possibly be conceptualised. The aim of this activity was to enable the data obtained in the group interview to be grouped together (where possible) and allow for further categories to be aggregated and / or articulated. This process also served the purpose of ensuring that what was documented incorporated everything that was important to the group(s) regarding 'measuring nursing care'. No additional measurable concepts were identified by participants.

As a starting point for conceptualising the concepts the researcher identified four potential headings based upon discussion from participants in the group interview. The headings were: safety; communication; caring; and coordination. There was general agreement from participants that each of these four headings were easy to comprehend. The group indicated that they appeared to provide a good starting point for how to think about analysing and measuring nursing care in a holistic way and a discussion about them then ensued. A whiteboard was used to document and then organise the concepts identified by participants into the four potential headings. During this process the researcher was actively seeking participants to consider alternate headings and ways of conceptualising nursing care.

This process began with the researcher writing the headings (safety, communication, caring and coordination) onto a whiteboard. The individual concepts suggested by participants were then applied to each of these categories. The results of this activity are presented in Table 4.4. It was obvious to all participants in doing this exercise that many

concepts overlap and that categorising nursing into headings was a relatively difficult process due to the participants' individual understanding and views on each of the concepts.

Table 4.4: Categorisation of concepts into the headings of safety; communication; caring and coordination

Safety	Knowledge, experience, application of medical knowledge, competence, basic nursing care
Communication	Authority, listening, honesty, professionalism, confidence / trust, social skills, respect, consideration
Caring	Quality of attention, honesty, consideration, competence, respect, basic nursing care
Coordination	Knowledge, experience, continuity, teamwork, professionalism, application of medical knowledge, consideration

During the process of allocating these concepts into categories, some participants discussed that caring also involved communication with patients and that these two concepts overlapped. It was also identified by one participant that coordination needed to encompass the role that nurses play in coordinating other people and teams within the hospital or healthcare setting as well as the coordination of an individual patient's care.

As a result of this discussion it was agreed that the four headings of safety, communication, caring, and coordination could potentially be used to conceptualise the measurement of nursing care. No additional headings were suggested by participants. Agreement was reached that the concept of coordination should also encompass collaboration between nurses and all other members of the healthcare team.

4.8.2.3 Summary of findings from consumer group interviews

The consumer group interviews explored the views of patients / consumers, which provided rich and meaningful data about how nursing care might be measured. Consumers verified the need to explore the concepts of caring and communication as

well as safety and provided validation of the need for a person-centred approach to measuring nursing practice. These concepts were not evident in previous attempts to measure nursing practice within the published literature and as a result identified a focus for ongoing research within this project.

4.8.3 Expert nurse interviews

The focus of the expert nurses' interviews was on building knowledge regarding how nursing care can be measured. This included discussion about what nursing-sensitive outcomes are; an exploration of how nursing-sensitive outcomes are being used; the identification of conceptual frameworks that have been used to identify and measure nursing-sensitive outcomes; and developing knowledge on specific nursing-sensitive outcomes and how data could be collected on them. Specifically the expert nurse interviews aimed to answer the following research questions:

- what nursing-sensitive outcomes are currently being used in Australia to measure the outcomes of nursing practice?
- what conceptual frameworks are used to guide the measurement of nursing-sensitive outcomes in research and practice?
- what concepts should be considered when measuring the outcomes of nursing practice?

4.8.3.1 Participant Information

Six people agreed to participate in the expert nurse interviews. Five of the six participants were female. All participants used English as their first language. Six expert nurse interviews were conducted between July and September 2011.The interviews had an average length of forty-one minutes.

4.8.3.2 Expert nurses' perspectives on nursing-sensitive outcomes

The expert nurse interviews used semi-structured interviews to gather data. The interview guide is provided in Appendix 9. The opening interview question asked each participant to discuss why they became interested in nursing-sensitive outcome measures. The responses of participants to this question enabled the researcher to

identify their involvement in research and clinical practice on this topic and began the process of understanding their philosophical views about how nursing-sensitive outcomes can be used in research and clinical practice. A broad range of philosophical perspectives and experience in using nursing-sensitive outcome measures was noted amongst the participants.

The remaining questions enabled the researcher to identify how nursing-sensitive outcomes are being used in Australia. It also enabled collection of data about conceptual frameworks that could be used to measure the outcomes of nursing work. Data from the interviews identified a number of conceptual frameworks that were not identified within the initial literature search. This was an important outcome of the interviews as gaining knowledge on how nursing-sensitive outcomes can be used, and any conceptual frameworks that could be utilised to underpin their collection and use in clinical practice, was a primary aim of this component of the research project.

Following analysis of the expert nurse interviews the main themes were:

- Safety is the first priority
- Positive measures are absent
- Methodological rigour is fundamentally important
- The visibility of nursing care

4.8.3.2.1 Safety is the first priority

All participants asserted the imperative to measure the safety outcomes of nursing care. Most participants described why safety was the highest priority though the rationales varied amongst the participants. Participant 4 described how ensuring safety was paramount, asserting that communication and other aspects of nursing care are important but nursing's main aim is to assure patient safety. This viewpoint underscored the rationale for this participant's primary focus on measuring safety outcomes. Two participants (Participants 2 and 3) described how safety indicators and outcome measures are the only nursing-sensitive outcomes being used and that this demonstrates

their primary importance. Participant 1 described how in their view, society drives the indicators and outcomes that are measured. In this participant's opinion both the community and funding organisations insist on information related to safety and that is why it is the first priority for data collection at the present point in time and is illustrated here:

> … *you have to look at the most critical outcomes, and to determine what the most critical outcomes* [are] *you've got to look at what are contemporary societal demands for outcomes that the community want. And at the first and primary level will be the safety outcomes. Because that's what funders are most interested in, and at the end of the day patients and their families, they at least want to come into hospital and go home better than they were. (Participant 1).*

4.8.3.2.2 Positive measures are absent

Most of the expert nurses explored how the positive contribution of nursing to wellness and well-being is absent from existing indicators. Most participants identified that this was a significant gap in the way nursing outcomes are being conceptualised and measured. Some participants (Participants 1, 4 and 6) indicated that fundamentals of care should be included in any endeavour to measure the outcomes of nursing care. This is exemplified in the following quote:

> *So, do they feel that, do they feel cared for? Do they know what's happening to them? Do they know what choices they have got to make and are they helped to make those choices? When [pause] do they get food to eat that is palatable? Can they reach it? Can they take the foil off the butter pans, and is there food, do they, are they able to wash their hands before they eat? Do they get a response when the call bell is rung? Do they feel valued people, do they feel comfortable, are they pain free? All of those fundamental care roles*

> *that have been the role of nursing since it began thousands of years ago, and that if nursing gives up, would mean the end of nursing as a profession. (Participant 1).*

Other participants (Participants 4 and 6) expressed that outcome measures should include the patient perceptions of safety; and fundamental care measures that are focused on nursing care in relation to body systems. One participant (Participant 2) discussed how the measurement of nursing-sensitive outcomes was evolving and that there was a lag (in Australia) behind research from the USA, which commenced approximately ten years prior to similar research being conducted in Australia. This participant discussed how this was responsible for the absence of positive measures of nursing and that nursing-sensitive outcomes research will change over time as we move beyond the need to measure nurse staffing and its impact on safe care and move into areas that explore the quality of nursing interventions.

Finally, one participant provided this explanation as to why positive measures are absent within nursing outcomes research:

> *We tend to measure what is easy as opposed to what is really a true reflection of nursing's contribution. But it's always going to be a balancing act because you have got to get the data. (Participant 2).*

4.8.3.2.3 Methodological rigour is fundamentally important

All six expert nurses explored the need to ensure that all nursing-sensitive outcome measures accurately and reliably measure the impact that nursing care has on patients and patient outcomes. The first component to this is ensuring that the indicators measure the impact of nursing care on patient outcomes. Participant 5 summarised this requirement well.

> *So I think if we are going to have outcomes that can really be seen as a measure of nursing care and an indicator of quality, quite clearly, they have to be those nursing activities both in a community and an acute care setting that are under the direct control of nurses. (Participant 5).*

The second component to ensuring methodological rigour is to ensure that the concepts being measured are measured reliably and with internal and external validity. A number of participants (Participants 1, 2, 4 and 6) discussed how method is the key to linking nursing interventions with nursing outcomes. Participant 4 summarised the role of research in achieving this objective:

> *… so then it does come to the rigour of the method, [pause] to say OK, just because this is a nurse-sensitive outcome you can't say that the outcome is nurse-sensitive. What you've got to do then is set up a design that says this is absolutely nurse-sensitive because nothing else could have interfered with it. (Participant 4)*

A number of participants (Participants 2, 3 and 5) also expressed the need to ensure that data was available for collection and that measurement of outcomes did not become burdensome. This reliance on data availability has implications for the accuracy of any measures that are used. Participant 6 described how the methods we use should be grounded in the actions of nurses but cautioned that often the things we think are simple are not. This participant suggested the following general approach:

> *… the first thing is it has to be as simple as possible. Second, it has to be as short as possible and third, it has to be as unobtrusive as possible, so it needs to be part of a routine and then if it meets those three criteria then it ought to be collected at unit level and hospital*

> *level and at state level and there should be reliability and validity built into the way that it's been collated. (Participant 6).*

Two participants (Participants 2 and 3) described data abstraction of coded medical record data from large datasets as the only feasible way of collecting nursing-sensitive outcome measures. Interestingly, Participants 1 and 6 questioned the accuracy of coded medical record data and whether it captured nursing work accurately.

Thus, there was no consensus amongst participants on the best way to collect nursing-sensitive outcome measures and a diverse range of approaches was described. However, the requirement to ensure that the concept being measured accurately demonstrates a link between nursing interventions and the outcomes of nursing care was universally promoted.

4.8.3.2.4 The visibility of nursing care

The visibility of nursing care was discussed by two participants in relation to the nursing role and the difficulties experienced in measuring it. Participant 2 described the nurses' role in surveillance as being an invisible component of nursing care that isn't documented. This is summarised in the following quote:

> *So sometimes the actions are actually invisible, again, because it is so much about nursing, so much of what we do, is in lots of ways invisible, or, not directly, you know, you don't have a surgical procedure, you kind-of have someone who is watching over you after that, and is detecting signs that maybe you are potentially going to haemorrhage or that you are febrile, or various things like that. (Participant 2).*

This participant went on to describe how nursing-sensitive outcome measures should focus on safety outcomes because of the invisibility of nursing's surveillance role to

patients and other healthcare workers. The invisibility of nursing surveillance was also used to rationalise the use of data abstraction from coded medical records as the primary source of data for measuring nursing outcomes. It was therefore seen as necessary to have very large data sets to analyse and identify when nursing's surveillance role had not been successful in preventing deterioration and death.

Participant 4 described the visibility of nursing care but described nursing care as visible and talked about the "*panoptical role of nurses*" in preventing adverse events and linked this with the concept of "*failure to rescue*". This participant also reflected on their own experiences as a recipient of nursing care and is illustrated in the following quote:

> *I used to know if the nurse who arrived at my door was senior or junior and I used to describe it as the nursing gaze because they would stand at the door and if they were an experienced nurse they would do that sort of sweep of the room and they'd say, hi, I'm coming to take your blood pressure, but they'd walk forwards picking up this, moving that, lifting that, checking this, looking at that, fiddling with the other. If it were a junior nurse she would come in and stare at the blood pressure cuff on the wall and say, I am coming to take your blood pressure, and that's what she would do and then she would leave [pause] but by and large the more inexperienced they were the more task focused they were and the less safe you felt. (Participant 4).*

4.8.3.3 Summary of findings from the expert nurse interviews

The expert nurse interviews explored the views of nurses in Australia who had published on nursing-sensitive outcomes within peer reviewed journals in the last ten years. They provided rich and meaningful data that has contributed to building knowledge and understanding about how nursing-sensitive outcomes are being used in research and in clinical practice.

4.8.4 Analysis of published conceptual frameworks

The focus of the analysis of published conceptual frameworks that explore nursing outcomes was on building knowledge of how conceptual frameworks can be used to guide the measurement of the outcomes of nursing practice. Specifically, the analysis of published conceptual frameworks aimed to answer the following research questions:

- what conceptual frameworks are used to guide the measurement of nursing-sensitive outcomes in research and practice?
- what concepts should be considered when measuring the outcomes of nursing practice?

As described in section 4.6.4, information about the conceptual frameworks in the form of figures and narrative descriptions was retrieved from the published literature. Each conceptual framework was analysed to identify the following attributes: major constructs; tenets and assumptions; logical consistency; and the structure, format and presentation of the framework.

4.8.4.1 Identification of the published conceptual frameworks which measure nursing outcomes

The literature search described in section 4.6.1, was used to identify all the published conceptual frameworks that have been used to inform the measurement of the outcomes of nursing practice in some way. It included all published literature that presented a conceptual framework for measuring the outcomes of nursing care. During the literature review, all articles deemed relevant were screened to identify the use of a conceptual framework and flagged for review in this stage of the project. In addition, conceptual frameworks identified during the expert nurses interviews were sourced and included within the analysis. Figure 4.2 illustrates the process of identifying sources for the conceptual frameworks used within the data analysis.

Newman's (1979) definition of a conceptual framework was used to guide decision making around what is a conceptual framework and what should be included in the data analysis. Newman (1979) defines a conceptual framework as an organisation or matrix of concepts that provides a focus for enquiry. For this reason, not all source documents necessarily described their contribution as a conceptual framework, but those included

in this analysis were overt in the way they presented lists of indicators or used headings to describe or refer to the concepts being studied. This included categorization or using headings to structure or organise the indicators that were collected.

The twenty-five conceptual frameworks subsequently included in the data analysis are listed in Table 4.5. The name given to the conceptual framework by the authors and the source document are identified.

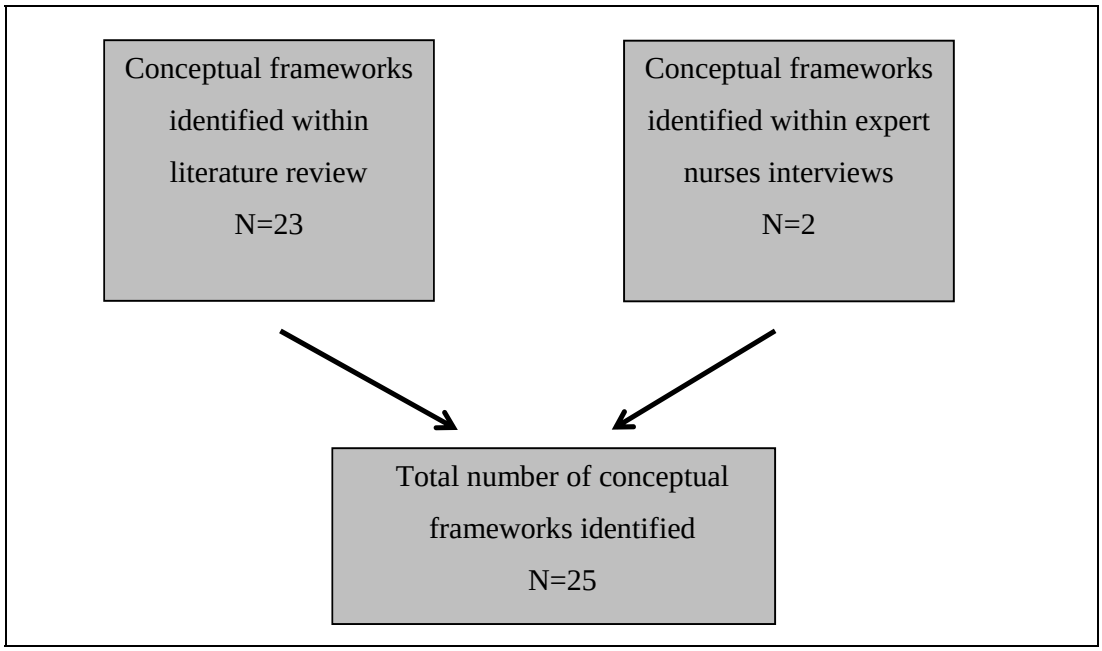

Figure 4.2: Sources of published conceptual frameworks for measuring nursing outcomes used in the data analysis

Table 4.5: Conceptual Frameworks (and primary source document) included in the analysis of published conceptual frameworks for measuring nursing practice.

Name of Conceptual Framework	Source
Nurse staffing, quality of care, and outcomes	Clarke and Donaldson (2008)
Outcomes model for community-based settings	Cohen et al. (2000)
Standardized outcomes assessment tool for acute care	Cranley and Doran (2004)
Health Status Outcomes Dimensions (HSOD) instrument	Ditmyer et al. (1998)
Nursing-sensitive outcomes	Doran (2003)
The Quality Caring model	Duffy and Hoskins (2003)
Nursing discipline specific indicators	Duffy (2002)
Professional practice model for nursing	Harwood et al. (2007)
Commonly used nursing-sensitive outcome indicators	International Council of Nurses (ICN) (2009)
Nurses Role Effectiveness Model (NREM)	Irvine, Sidani and Hall (1998); Doran et al. (2006a)
Nursing report card for acute care settings - Nursing's quality indicators	Jones et al. (1997)
The affect of nursing care on outcomes	Joseph (2007)
Conceptual framework of nurse staffing and patient outcomes	Kane et al. (2007)
The MOS conceptual framework	Kelly et al. (1994)
Mapping of nurse items onto the person-centred nursing framework	McCance, Slater and McCormack (2008)
A framework for exploring the nursing work environment	Hall and Doran (2007)
Quality health outcomes model	Mitchell, Ferketich and Jennings (1998)
Conceptual model of outcomes research - Nursing Outcomes Classification	Moorhead et al. (2008)
Patient care delivery model	O'Brien Pallas et al. (2011)
MilNOD indicators	Patrician et al. (2010)
Refined quality health outcomes model	Radwin, Cabral and Wilkes (2009)
Conceptual framework for the RICH nursing study	Schubert et al. (2008)
Conceptual model of the development of patient perceptions of quality	Sofaer and Firminger (2005)
Nurse working conditions and patient safety outcomes	Stone et al. (2007)
Conceptual model of patient, nurse, and financial outcomes associated with inadequate nurse staffing	Unruh (2008)

4.8.4.2 Themes from the analysis of published conceptual frameworks

The analysis included twenty-five different published conceptual frameworks that have been used to study the outcomes of nursing practice. Many of these conceptual frameworks are similar and use Donabedian's (1980) framework of structure, process and outcomes as headings. Some of these conceptual frameworks focus on nurse staffing and do not explicitly include patient outcomes. For this reason not all of the conceptual frameworks included in this analysis were identified in the integrative review of all primary and secondary research examining nursing's impact on patient outcomes described within Chapter 2.

From a visual design perspective, the structure, format and presentation of the frameworks is now discussed. Table 4.6 provides a summary of the findings from this component of the analysis. It is followed by an indication of the key themes which emerged from the analysis.

Table 4.6: Findings from analysis of published conceptual frameworks related to the design of the conceptual frameworks that measure nursing practice.

Structure	• Most involve diagrams and flow charts that have inter-relating concepts. • Most use Donabedian's structure, process and outcomes as heading. • Some use inputs, processes and outcomes or inputs, throughputs and outcomes. • One uses dependent variables, independent variables and co-variates. • Some have very limited structure and use headings to categorise different types of indicators.
Format	• Most involve diagrams and flow charts that have inter-relating concepts • Some have very limited structure and use headings to categorise different types of indicators.
Presentation	• All are presented as diagrams within the text of the article or chapter. • Most involve a detailed description of the framework within the text of the source document but not always of the assumptions and concepts underlying it.

From a content perspective, the themes identified in the analysis of the published conceptual frameworks were:

- Donabedian's structure, process and outcome framework dominates as an organising framework
- Structural measures are well described
- Process measures are poorly articulated
- Outcome measures vary in focus and include a wide variety of concepts
- The nursing role, caring, person-centredness and patients' perception of quality are also used to explore nursing-sensitive outcome measures

4.8.4.2.1 Donabedian's structure, process and outcome framework dominates as an organising framework

Within the literature on nursing-sensitive outcomes that articulates a conceptual framework, Donabedian's (1966) *structure, process and outcome* framework dominates all other approaches as the underpinning conceptual framework. Eleven of the twenty five published frameworks use Donabedian's framework as the skeleton around which their framework is explored. This is overt and these published frameworks use structure, process and outcome as headings. Another seven of the published frameworks refer to one or more of the headings and the influence of Donabedian's concepts were apparent in the design, structure or linkages within the frameworks illustrated.

Other terms include inputs, processes and outcomes or inputs, throughputs and outcomes. One publication used dependent variables, independent variables and co-variates. Thus, it is evident that eighteen (18) out of a possible twenty-five (25) of the frameworks identified use Donabedian's framework in part or in entirety.

4.8.4.2.2 Structural measures are well described

Most of the conceptual frameworks explored structural components. These included the following concepts: nursing hours per patient day (NHPPD); nurse characteristics (such as, staff mix, workload, education credentials); nurse work environment; nursing roles and / or model of care; scope of practice; skill mix; patient complexity; philosophy of

care; collaborative practice; and organisational characteristics (such as, organisational structure, culture, leadership, and the type of organization).

Many of the published frameworks present a small number of structural components but all of these frameworks then categorise these into nurse, organisation and patient categories (some use different names for these categories, such as, organisation or facility or system). Some of the published conceptual frameworks focus on structural measures. This was particularly evident in the group of conceptual frameworks that focus on measurement of nurse staffing and the nursing work environment.

4.8.4.2.3 Process measures are poorly articulated

Despite the use of Donabedian's framework of *structure, process and outcome* in a large percentage of conceptual frameworks, it was evident from the analysis of the frameworks that process measures were not well articulated. In those that did identify process measures there was limited consensus on them and how they were used. Some examples of different approaches were:

- Nursing discipline specific indicators (Duffy 2002) – the process indicators outlined in this framework were: skin assessment completed on admission; thorough discharge instructions; timely medication administration; maintenance of caring relationships with patients and families; and falls prevention programmes.
- Professional practice model for nursing (Harwood et al. 2007) – the process component in this framework related to the nursing process: identifying needs / goals; negotiating and collaborating; decision making; planning; implementing; and evaluating.
- Nurses Role Effectiveness Model (Doran et al. 2006a) – the process component in this framework explored the different roles of nurses; the independent role (nursing interventions); the medical care-related role (medically directed care and expanded scope of practice); and the interdependent role (team communication and coordination of care).

- ANA nursing report card (Jones et al. 1997) – the process component in this framework related to the identification of two indicators. They were maintenance of skin integrity and nursing staff satisfaction
- Caring and the person centred nursing framework (McCance, Slater & McCormack 2008) – the process components in this framework related to the components of person-centred nursing: having sympathetic presence; working with patients beliefs and values; engagement; sharing decision making; and providing physical needs. This framework also outlined the requirement for prerequisites of professional competence and developed interpersonal skills.

Most conceptual frameworks did not describe or clearly articulate what the process measures were and what their role was in the overall conceptual framework. It was evident that different approaches were used to explore process measures. Given that process measures are often used to measure the actions of nurses in achieving outcomes for their patients, this lack of consensus on the approach to use, or the actual measures being used, was surprising.

4.8.4.2.4 Outcome measures vary in focus and include a wide variety of concepts

A large proportion of the outcomes identified in the published conceptual frameworks focused on safety outcomes. One of the frameworks focused exclusively on safety indicators. The framework that did this was the *Nursing work conditions and patient safety outcomes framework* (Stone et al. 2007). The patient outcome measures that were included in this framework were: CLSBI (central line associated bloodstream infection), VAP (ventilator associated pneumonia), CAUTI (catheter associated urinary tract infection), Decubitus ulcer and 30 day mortality.

Some of the published conceptual frameworks do not outline what indicators they measure and use headings to refer to patient outcomes, clinical outcomes or safety outcomes. The following frameworks used this approach: *Nurse staffing, quality of care and outcomes* (Clarke & Donaldson 2008); *Rationing of nursing care* (Schubert et al. 2008); and the *Affect of nursing care on outcomes* (Joseph 2007).

A number of the frameworks that were analysed demonstrated a comprehensive and balanced view of nursing in their discussion of patient outcomes. Examples of frameworks that achieved this were: *ANA nursing report card* (Jones et al. 1997); *Nurses Role Effectiveness Model* (Doran et al. 2006a); and the *Outcomes assessment tool for acute care* (Cranley & Doran 2004).

Amongst the nurse staffing focused literature, the outcomes were sometimes also expressed in terms of the nursing outcomes. Examples of this and the way in which nursing outcomes were also incorporated, include:

- *A framework for exploring the nursing work environment* (Hall & Doran 2007) – the outcome indicators studied were nurses' perceptions of: job satisfaction; job pressure; job threat; role tension; quality of care; and nursing unit leadership.
- *Patient care delivery model* (O'Brien Pallas et al. 2011) – Outcomes were expressed in terms of patient outcomes (health status; medical consequences; symptoms; health behaviours; and knowledge related to condition); nurse outcomes (burnout; health; professional practice; safety; and job satisfaction); and system outcomes (quality of care; absenteeism; nurse turnover; cost; length of stay; and staffing efficacy).

A very wide range of different outcomes were encompassed across all the different conceptual frameworks. Individual outcome measures and the number of times they were referenced in different conceptual frameworks have been summarized into a graph and are presented in Figure 4.3. The highest frequency items are patient satisfaction (16), patient education (11), functional status (10), pressure ulcers (9), and pain management, self-care skills and symptom management (8 each). A number of outcome measures were only seen once within the conceptual frameworks. This included clinical observations, pneumonia, nurses' perception of quality of care, and UTI (urinary tract infection) (1 each). The data presented within figure 4.3 illustrates the diversity of the different outcome measures explicitly discussed within the conceptual frameworks and the breadth of nursing care explored.

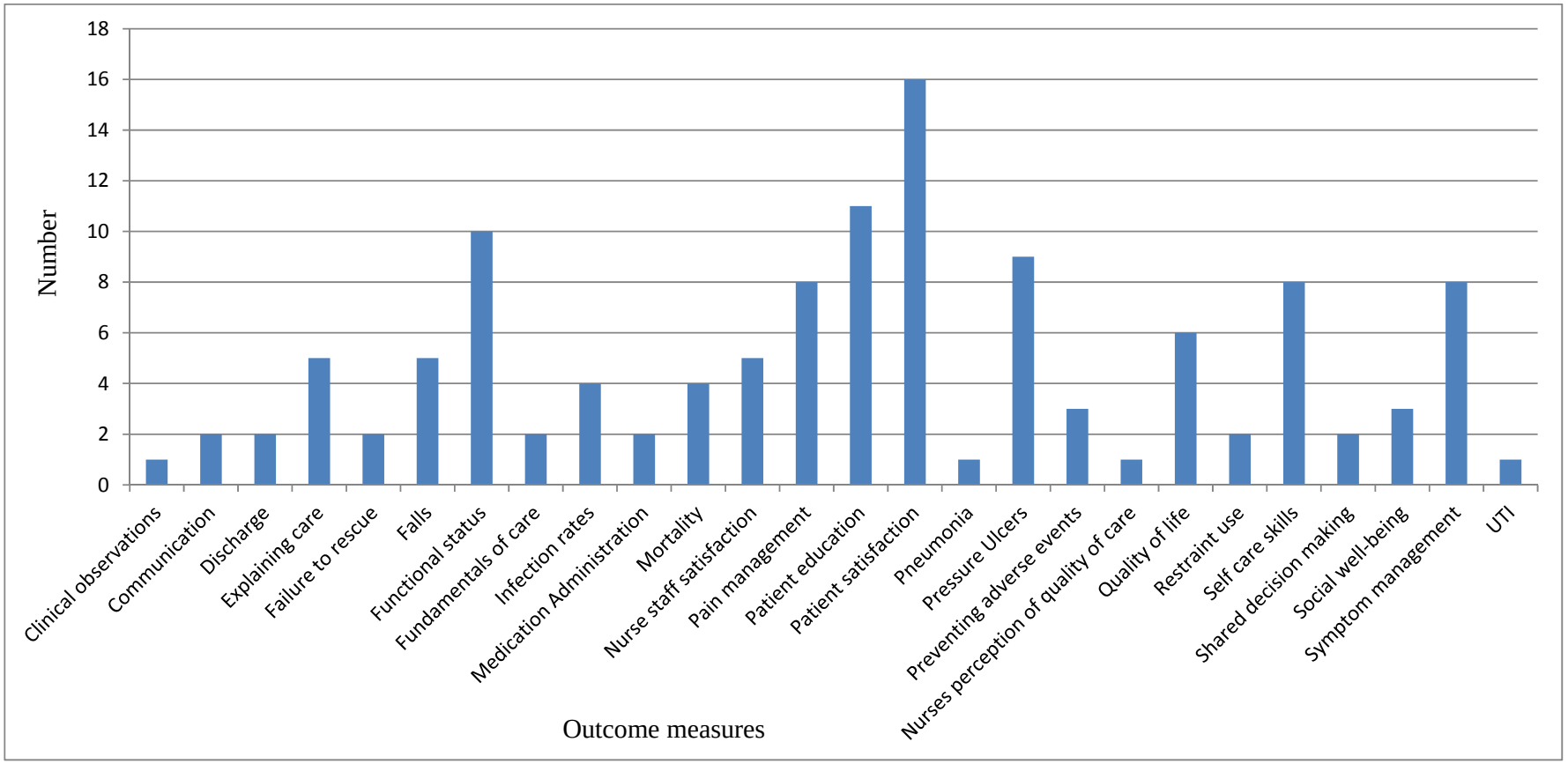

Figure 4.3: Diversity of outcome measures explored within the twenty-five conceptual frameworks examined in the analysis of published conceptual frameworks for measuring nursing practice

4.8.4.2.5 The nursing role, caring, person-centredness and the patients perception of quality are also used to explore nurse sensitive outcome measures

The use of defined concepts such as the nursing role, caring, person-centeredness and patients' perceptions of the quality of health services have been used as constructs for examining nurse sensitive outcome measures. In the case of person-centeredness and patients' perceptions of the quality of health services this provided a narrow snapshot of nurse sensitive outcome research due to the focus on the named construct. These frameworks did not use Donabedian's framework of structure, process and outcomes.

The nursing role was used to outline the process components within the *Nurse Role Effectiveness Model* (Doran et al. 2006a). This linkage between the nursing role and measuring the outcomes of nursing practice was well explained and appeared to be conceptually strong. The explicit use of the nursing role as a proxy to explain the processes of nursing care provided a way of viewing nursing activities that linked structural factors with the outcomes of care. It did not however describe how to measure the constructs of the nursing role but used the nursing role to link actions of nurses (explained in terms of different role functions) with outcomes.

The use of the construct of caring in Duffy and Hoskins *Quality-Caring mode*l (Duffy & Hoskins 2003) also provided a strong conceptual view of the outcomes of nursing practice. This framework focuses on caring relationships and used the characteristics of these as process measures. Structural measures and outcome measures are then broken down into provider (e.g. nurse), patient / family and system categories. This framework included perceptions of feeling cared-for and focused on a relationship centred approach to care delivery as well as collaborative relationships.

4.8.4.3 Summary of findings from the analysis of published conceptual frameworks

The completion of this thematic analysis of published conceptual frameworks has facilitated knowledge development and understanding on the thinking behind the current research endeavours that examine nursing-sensitive outcomes research. It is evident from the literature review, information from expert nurses and this subsequent

analysis, that a large majority of the literature on nursing-sensitive outcomes does not include reference to a published conceptual framework, though many make reference to Donabedian's (1980) structure, process and outcome model. The majority of authors who do include a conceptual framework within their publication, use the framework to outline their understanding of the concepts that link nursing-sensitive outcomes with structural measures such as nursing characteristics (for example, skill mix, years of experience, baccalaureate education). That is, they make explicit the linkages between structure and outcome. Process measures are less frequently used, but when they are used they frequently strengthen the linkage between nursing actions and nursing outcomes, which defines the concept of nursing-sensitive outcome measures.

This process was invaluable in focusing the analysis of the existing literature on nursing-sensitive outcome measures. It provided insight into the structural design and conceptual underpinning of the existing literature that includes a conceptual framework that explores nursing-sensitive outcome measures. In combination with the consumer group interviews and the expert nurses interviews it clarified concepts and enabled the development of a conceptual framework that could be presented in Round 2 of the modified Delphi survey.

4.9 Procedures used to ensure rigour within Phase 1 of the research

The concept of trustworthiness was used to ensure rigour within this phase of the research project (Lincoln & Guba 1985). The following discussion explores how this research addressed the criteria of credibility, dependability, confirmability and transferability as outlined by Lincoln and Guba (1985) and as described in section 3.6.2.

4.9.1 Credibility

Strategies to ensure credibility were built into this research during research design, data collection, data analysis and during the interpretation of the findings. Table 4.7 has been used to present how the six specific processes for assuring credibility (as identified by Lincoln and Guba 1986) were incorporated into this project.

Table 4.7: Processes for assuring credibility in Phase 1 of this research project

Processes for assuring credibility (Lincoln & Guba 1985; Lincoln & Guba 1986)	In this research ….
Prolonged engagement	▪ Consumer group interviews were scheduled for two hours to enable sufficient time for the researcher to build trust with participants and ensure that the aims of the group interviews were met. Given the purpose of the group interviews this was considered appropriate. ▪ Expert nurse interviews were conducted via Skype and were scheduled for one hour. Given the purpose of the group interviews this was considered appropriate. ▪ In addition, the researcher was reflexive of their own perceptions and understandings about the topic .
Persistent observation	▪ Persistent observation of the topic was undertaken. Multiple perspectives were examined and depth and understanding of the topic was sought. This enabled context to be understood and the most important factors involved in measuring nursing care to be identified.
Triangulation	▪ Source triangulation was used in this phase of the research. Healthcare consumers, nurses and the literature were all used as sources of data. The use of multiple perspectives assisted in developing a richer and more complete understanding of the concepts being measured and constructing knowledge on the topic. ▪ In addition, the research supervisors were used to cross-check data accuracy, coding and interpretation of findings.
Peer debriefing	▪ As part of research supervision peer debriefing was used to discuss decisions and actions about design, data collection and analysis and interpretations of findings. ▪ In addition, presentation of initial and interim progress reports and presentations at conferences were used to gain feedback on research design, data collection, data analysis and interpretation of findings.
Negative case-analysis	▪ Alternative or disconfirming views were identified, analysed and interpreted as part of data analysis. Braun and Clarke's (2006) phases of thematic analysis was used as the framework for data analysis and included identification of disconfirming data and discussion of it with the research supervisors (see Table 4.2).
Member checking	▪ Informal member checking occurred at the end of the consumer group interviews as part of the conceptualisation exercise (see section 4.8.2.2.5). ▪ Member checking was not completed with the expert nurse participants as it was not deemed to be necessary. Audio recordings of the interviews were transcribed verbatim by the researcher and accuracy was checked through sampling of excerpts with the research supervisors.

4.9.2 Dependability

Dependability requires the researcher to provide enough details about the procedures used in the study that it could be replicated by another researcher (Lincoln & Guba 1985). This thesis provides evidence of this approach.

In addition, this research has used decision trails to describe and justify decisions made in planning the research, choosing the samples, undertaking the research and in analysing data from the different components of the project. These decision trails have been described in the thesis and aim to ensure that the researcher is overt in describing decisions and reflexive in their role as researcher. The research supervision process has supported these decision trails throughout the project.

4.9.3 Confirmability

Confirmability relates to the ability of the researcher to objectively identify findings from the experiences and ideas of participants (Lincoln & Guba 1985; Shenton 2004). This includes a description of the researcher's ontological, epistemological and methodological beliefs and the use of reflexivity in discussing the research and their role within it. Section 3.2 provides an overview of the researcher's world view and reflective commentary has been used in presenting the findings of the research.

4.9.4 Transferability

Transferability involves the use of *thick description* so that the reader can assess the transferability of new knowledge from the research (Lincoln & Guba 1985). In writing up the findings of this research, thick and contextualised description has been used to illustrate the themes from the different components of the project. This includes the use of the participants' voice in the description of themes.

Having discussed the procedures used to ensure rigour within the project, a discussion is now presented about how findings from all four data sources have been integrated within the project.

4.10 Integration of findings from different sources of data

Phase 1 of this research project included data collection and analyses within four distinct processes. These were: a review of the literature on nursing-sensitive patient outcomes; consumer group interviews; expert nurse interviews; and analysis of published conceptual frameworks.

Data from the consumer group interviews, the expert nurse interviews and the analysis of the published conceptual frameworks was analysed using a thematic analysis. A summary of the themes identified within this data analysis is presented in Table 4.8.

Table 4.8: Matrix of themes from Phase 1 of the research project

Group Interviews with patients / consumers	Expert Nurse Interviews	Thematic analysis of published conceptual frameworks
Ask the patient if they feel 'cared for'!	Safety is the first priority	Donabedian's structure, process and outcome framework dominates as an organising framework
Feeling safe is complex	Positive measures are absent	Structural measures are well described
Caring should be person-centred	Methodological rigour is fundamentally important	Process measures are poorly articulated
Nursing knowledge is visible	The visibility of nursing care	Outcome measures vary in focus and include a wide variety of concepts
		The nursing role, caring, person-centredness and the patients perception of quality are also used to explore nursing-sensitive outcome measure

As a result of the analysis of this data a conceptual framework for measuring nursing practice was developed. It is described in the following discussion.

4.10.1 Development of the conceptual framework for measuring nursing practice

Following analysis of the data from the consumer group interviews, the expert nurse interviews and the analysis of the published conceptual frameworks, the data was integrated to develop a conceptual framework for measuring the patient outcomes that occur as a result of nursing practice. The conceptual framework then formed the basis for the Round 1 Modified Delphi survey to be used in Phase 2 of the research.

A conscious decision was made to adopt Donabedian's (1966) framework of structure, process and outcome measures when developing the conceptual framework. Based upon data from the consumer group interviews, the expert nurse interviews and the analysis of the published conceptual frameworks, it became evident that the explicit use of structural measures, process measures and outcome measures would enhance the methodological and conceptual rigour related to measuring the impact of nurses and nursing practice on patient outcomes.

Once the structure of the conceptual framework was decided, data from this phase of the project were used to identify the concepts to be measured. These concepts were identified and clustered together using concept mapping techniques under each of the structure, process and outcome categories. The outcome of this process was a text-rich framework using structure, process and outcome measures that used headings to group similar concepts together. The draft conceptual framework developed at this stage of the research is presented in Figure 4.4.

Nursing-sensitive patient outcomes

Structure

Patient characteristics:
- Patient acuity
- Ward type
- Patient turnover

Nurse characteristics:
- NHPPD
- Skill mix
- Education & experience
- Agency staff

Organisational characteristics:
- Type of organisation
- Model of Care
- Nursing work environment (NWI)

Processes

Risk management strategies / safety culture:
- Falls management
- PU prevention
- Medication safety
- Handwashing

Patient perceptions of:
- Feeling safe
- Feeling cared for
- Being involved in decision making

Measure of collaboration / team work

Measure of caring / person-centredness

Patient outcomes

Safety outcomes:
- Falls rates
- Pressure ulcer prevalence
- Medication errors
- Infection rates

Quality Outcomes
- Overall patient perception of nursing care:
  - Satisfaction with care
  - Satisfaction with planning for discharge
  - Satisfaction with pain management
  - Satisfaction with education
- Improved functional status
- Therapeutic self-care
- Successful discharge

Figure 4.4: First draft of the conceptual framework for measuring the impact of nurses and nursing practice on patient outcomes following completion of data collection and analysis in Phase 1 of the research project

4.10.2 Phase 2 modified Delphi survey development

Following development of the conceptual framework, the Round 1 modified Delphi survey was developed. The survey was developed using the structure, process and outcome headings and the sub-headings evident in the conceptual framework presented in the previous section. Individual items presented within the survey were decided based upon the data from participants and information obtained in the integrative review of the literature (described in Chapter 2). Fifty-six concepts were included in the Round 1 modified Delphi survey.

4.11 Summary

Phase 1 of this research project has identified the key elements of quality nursing care from the perspective of consumers. During interviews with expert nurses, it has examined what nursing-sensitive outcome measures are being used in Australia and the conceptual frameworks that are used to guide their measurement. Analysis of the published conceptual frameworks for measuring nursing-sensitive outcomes was also presented. As a consequence of data collection and analysis, some of the important concepts for measuring the outcomes of nursing care have been identified and a conceptual framework for organising and conceptualising those concepts has been presented. In the next phase of this research a modified Delphi survey was undertaken. The research design and findings of the modified Delphi survey is presented in the next chapter.

CHAPTER 5: PHASE 2 - RESEARCH DESIGN AND FINDINGS

5.1 Introduction

This chapter presents and explains the methods and the findings from Phase 2 of this multi-phase, mixed methods research study. This phase of the research addressed the following research questions:

- what concepts should be considered when measuring the outcomes of nursing practice?
- what are the most important concepts to practicing nurses, when measuring the outcomes of nursing practice?
- how can the important concepts related to measuring the outcomes of nursing practice be conceptualised?

This chapter begins with a description of the research approach, the methodology and the specific research methods used in this phase of the research project. The ethical considerations relevant to the research are then outlined. This phase of the research project used a modified Delphi survey to identify the most important concepts for evaluating the outcomes of nursing work. The sampling, data collection and data analysis procedures and the findings for the modified Delphi survey are described within the chapter. The second iteration of the conceptual framework for measuring the quality and safety outcomes of nursing practice is then presented. The chapter concludes with a presentation of the procedures used to ensure rigour within this phase of the research.

5.2 Research Approach

Phase 2 of this research project, used multiple methodologies to build knowledge and develop an understanding of the important concepts in measuring the outcomes of nursing practice. This approach is frequently used in multi-phase, mixed methods research projects and has been advocated by Creswell and Plano Clark (2011).

Knowledge gained within Phase 1 of the project was used as the starting point for this phase. The post-positivist paradigm was used to analyse the quantitative data and the constructivist paradigm was used to analyse the qualitative data. The constructivist paradigm was also used as the frame of reference for the integration of findings from the mixed methods used in this phase of the project.

5.3 Methodology

This descriptive research used a mixed methods approach to build knowledge and understanding about the important concepts involved in measuring nursing practice. Quantitative data and qualitative data were obtained concurrently using a modified Delphi survey. The participants involved in the modified Delphi survey were practicing nurses. They were asked to rate the importance of a list of concepts for evaluating nursing work that were identified within Phase 1 of the research project. Participants were also asked to identify additional concepts and these were then rated in subsequent rounds of the survey with the aim of seeking consensus agreement on a list of the most important concepts. This enabled further refinement of a conceptual framework for measuring the quality and safety outcomes of nursing practice. The methods involved in this phase of the research are now presented.

5.4 Methods

Phase 2 of this project used a modified Delphi survey with concurrent collection of quantitative and qualitative data. Descriptive statistics, thematic analysis and inductive reasoning were then used to identify the most important concepts to practicing nurses for measuring the quality and safety of nursing practice.

A summary of the study design for this phase of the project is represented in Figure 5.1. This diagram illustrates the iterative nature of the modified Delphi survey rounds, which occurred sequentially. Both quantitative and qualitative data were obtained in each of the three rounds of the survey.

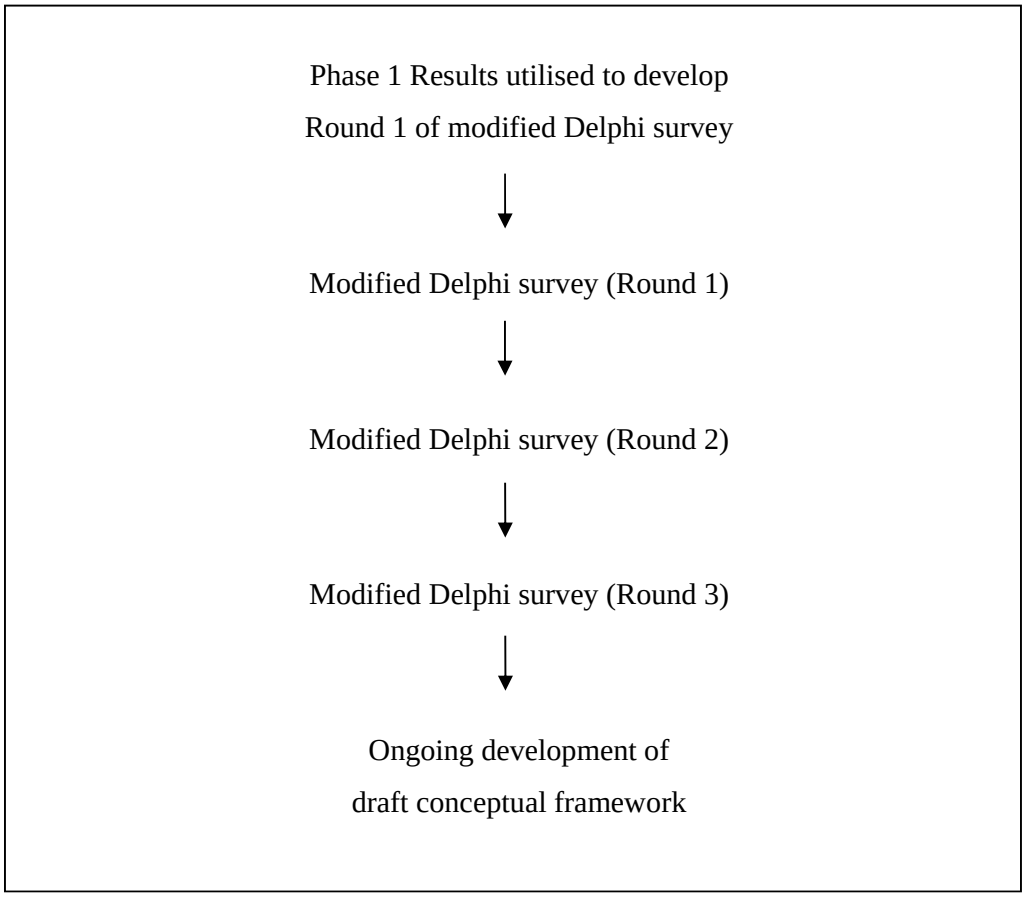

Figure 5.1: Phase 2 study design

A Delphi survey is a group facilitation technique that seeks to obtain consensus on the opinions of experts through a series of structured questionnaires, which are commonly called rounds (Hasson, Keeney & McKenna 2000). It is an iterative multi-stage process designed to combine opinion into consensus (McKenna 1994). There are many forms of Delphi survey and this research used a modified Delphi method (McKenna 1994) that involved the use of qualitative data obtained through focus groups and / or interviews to inform the development of the first round of the Delphi survey design in combination with information available from the literature (Hasson, Keeney & McKenna 2000). This qualitative phase occurred in Phase 1 of this research project and was described in Chapter 4.

The usual procedure for administering a Delphi survey includes the development of the Round 1 survey, and the distribution of that survey to what is frequently described as an expert panel. For the purpose of this research we will describe the expert panel as participants. This process begins a multi-stage iterative process where the participants have the opportunity to communicate their opinions and knowledge about a complex problem, in this case nursing-sensitive patient outcomes. The iterative process allows participants to see how their evaluation of the issue aligns with others, and to change their opinion, if desired, after re-considering the findings of the group's work (Kennedy 2004).

This method was chosen as a means of building knowledge and answering the research question (Duffield 1993; McKenna 1994) for the following reasons:

- the research problem did not lend itself to precise analytical techniques but benefitted from subjective judgements on a collective basis;
- the research population presented diverse backgrounds with regards to experience, expertise and views on quality of nursing care indicators;
- more subjects were needed than could effectively interact in a face to face meeting;
- time, cost and logistics made frequent meetings of all subjects unfeasible; and
- group conflict or domination needed to be prevented.

In this phase of the research project the modified Delphi survey assisted in clarifying concepts and enhancing knowledge about nursing-sensitive patient outcomes. As described in section 5.1, the modified Delphi survey used the post-positivist paradigm to gather and analyse quantitative data and the constructivist paradigm to gather and generate new knowledge from the qualitative data gathered in each of the three rounds of the modified Delphi survey.

The quality of a Delphi study is dependent upon the strength of its design, the sample and the process by which consensus is defined (Reid 1988 cited in Kennedy 2004, p. 505). As consensus agreement is the aim of a modified Delphi study, it is recommended that an agreed level of consensus be identified as part of the design phase of the research

process (Keeney, Hasson & McKenna 2006). In keeping with the recommendations of Keeney, Hasson and McKenna (2006) the pre-determined level of consensus set within this project was seventy-five percent (75%).

In this research study participants were asked to quantify if they thought a concept was important for measuring nursing practice on a five point Likert scale (1-very important, 2-important, 3-neither important nor not important, 4-not important, 5-totally unimportant). A five point Likert scale was chosen to decrease the burden in completing the survey and to facilitate a level of consensus being identified that equates to a mean agreement of seventy-five percent of participants scoring either 1 or 2 (very important or important) (Rolls & Elliott 2008). Descriptive statistics were used to analyse the perceived level of importance of concepts within the modified Delphi survey.

Qualitative fields were available for respondents to provide additional comments within each round of the modified Delphi survey. This qualitative data was used in the construction of knowledge and understanding of context. The qualitative data was analysed using thematic analysis. As a result of this, additional concepts were also identified for consideration by participants in subsequent rounds of the survey (Hasson, Keeney & McKenna 2000).

Duffield (1993) states that feedback of quantitative and qualitative data to participants aids decision making and informs individual respondents of other respondents' views. This then aids in the development of consensus. In this research, feedback on qualitative data also facilitated the identification of additional concepts for analysis in Round 2 and subsequent rounds and is in keeping with the constructivist approach used to collect and analyse qualitative data. This approach to gathering as well as analysing data is in keeping with other modified Delphi surveys and can be seen in other published studies (for example: Brown 2005; DeWolfe, Laschinger & Perkin 2010).

A maximum of four rounds was set prior to commencement of the project. This is consistent with approaches used by other researchers and is the maximum number recommended (Crisp et al. 1997; Hasson, Keeney & McKenna 2000; Keeney, Hasson & McKenna 2006; McKenna 1994).

5.5 Ethical considerations

Within this phase of the project, participants were recruited to participate in multiple rounds of an online survey. The ethical approvals that were obtained were previously described in section 3.5 and are included in Appendix 2 and 3. The ethical considerations of consent, privacy and confidentiality, ability to withdraw, and inconvenience/discomfort are discussed as they relate to this phase of the project.

5.5.1 Consent

All participants volunteered to be included in the study. All participants were given a participant information sheet prior to the commencement of the study. A copy of the participant information sheet is included as Appendix 10. Participants in all rounds of the modified Delphi survey provided tacit consent through participation and completion of the survey.

5.5.2 Privacy and confidentiality

Quasi-anonymity was maintained for all participants. True anonymity cannot be maintained within a Delphi survey because of the iterative process that is inherent within the methodology (Keeney, Hasson & McKenna 2006). Quasi-anonymity involved individual participants having anonymity amongst fellow participants but being known to the researcher (Keeney, Hasson & McKenna 2006). This approach facilitated the researcher providing individual feedback to participants on their responses in the previous round of the Delphi survey and also enabled follow up of non-respondents through the use of a structured reminder process.

Confidentiality was assured through aggregation of data and internal processes that ensured the privacy of records and record keeping. The anonymity of participants was protected in all documents related to the study and any information linking participants to data are stored electronically and password protected.

5.5.3 Ability to withdraw

Participants were able to withdraw at any time from the project as their participation was entirely voluntary. When a participant contacted a member of the research team to indicate that they wished to withdraw from the research they were not contacted to

participate in subsequent rounds of the modified Delphi survey. If a participant was a non-responder to a round of the modified Delphi survey they were contacted by the researcher via up to three reminder emails, in an attempt to promote a high response rate in subsequent Delphi rounds. This approach is in keeping with guidelines for using the Delphi survey (Keeney, Hasson & McKenna 2011).

5.5.4 Inconvenience / discomfort

All participants volunteered to be included in the study. The participant information sheet outlined that there were no foreseeable risks to participants and apart from the time involved in participating there was no inconvenience.

5.6 Sample

Participants in the modified Delphi survey were selected via a purposive, non-probability sample from two Local Health Districts within NSW and a private sector healthcare organisation. These organisations were chosen due to their large size and the geographical spread of their services. A private sector organisation was included so that input from nurses in both public and private sector organisations was considered.

The sampling frame included nurses from a range of roles and experience levels throughout the public and private healthcare system. It included:

- Assistants in Nursing
- Enrolled Nurses
- Registered Nurses
- Clinical Nurse Educators,
- Clinical Nurse Specialists
- Clinical Nurse Consultants
- Nurse Practitioners
- Nurse Unit Managers
- Nurse Managers
- Directors of Nursing

This sampling frame was chosen to enable a wide cross section of nurses to contribute to the development of consensus about nursing-sensitive patient outcomes and a conceptual framework to explain them.

The way in which participants were recruited was negotiated with the Nurse Manager or their nominated representative at every public hospital facility and community health service within the Local Health Districts included in the study. In the private hospitals the Directors of Nursing Services in each of the three hospitals, nominated a contact person and recruitment of potential participants occurred with their assistance. Some participants responded to promotional flyers and email communication. Most participants responded to information sessions about the research project that were conducted by the researcher at their workplace.

5.7 Data collection and data analysis procedures

Data was collected and analysed in iterative rounds of the modified Delphi survey. Quantitative data was analysed using descriptive statistics. Qualitative data was thematically analysed using guidelines developed by Braun and Clarke (2006).

Participants were asked to contribute to all rounds of the modified Delphi survey and must have contributed to the previous round to be invited to participate in subsequent surveys.

5.7.1 Round 1 of the modified Delphi survey

The fifty-six concepts identified in Phase 1 of this research were used to construct the Round 1 modified Delphi survey questionnaire. The process of developing the questionnaire was described in section 4.9.2 in the previous chapter. The questionnaire was then pilot tested.

5.7.1.1 Pilot testing

The questionnaire was pilot tested with a small convenience sample of ten nurses from the School of Nursing, Midwifery and Indigenous Health at the University of Wollongong. All ten participants in the pilot survey completed the survey and were

asked to provide feedback about the clarity of questions and concepts within the survey. Survey Monkey was trialled for use in this pilot testing. The data obtained from the pilot sample was not included in the results of this research. All participants involved in the pilot testing received a participant information sheet and tacit consent was provided through completion of the survey.

The use of pilot testing within Delphi surveys is recommended by a number of researchers to improve the validity and reliability of research findings (Clibbens, Walters & Baird 2012; Hasson, Keeney & McKenna 2000; Keeney, Hasson & McKenna 2006). In this research project, pilot testing resulted in minor modifications being made to the wording of a couple of concepts to improve clarity. The administration of the survey within Survey Monkey was evaluated and participants and the researcher provided feedback on its utility as an administration mechanism for the survey. The Round 1 modified Delphi survey questionnaire is included as Appendix 11.

5.7.1.2 Administration of the modified Delphi survey questionnaire

The Round 1 survey was distributed to participants as a hyperlink within an individualised email in October 2011. Survey Monkey was used to administer the questionnaire and communicate with participants.

5.7.1.3 Instructions to participants

Participants were asked to rank the importance of each concept for evaluating the outcomes of nursing care. The instructions to participants on how to complete the survey are presented in Figure 5.2.

Instructions on how to complete the modified Delphi survey – Round 1

The first round of this modified Delphi survey will ask you to complete some demographic information. This is contained on the next few pages.

You will then be asked to rate the importance of several concepts using a rating scale of:

- Very important
- Important
- Neither important or not important
- Not important
- Totally unimportant

These initial concepts of how we could measure the outcomes of nursing work have been developed from the existing literature and through interviews with nurses and healthcare consumers.

The initial concepts that are presented to you have been structured using a well-known framework by Donabedian that explores structure, process and outcome measures.

Structure, process and outcome measures are all considered important indicators of quality nursing care. They have been included because quality nursing outcomes are more likely to be realised if certain structural arrangements are in place and if processes of care meet recognised quality standards. Structure and process measures are also used to help analyse patient outcomes.

Please answer all questions as best you can. There are no right or wrong answers. At this stage of the research project we are seeking your opinions on whether these concepts are IMPORTANT and want to provide you with opportunities to add a concept or concepts if you feel something is missing.

Figure 5.2: Participant instructions for Round 1 modified Delphi survey

5.7.1.4 Non-responder follow up procedures

All participants were given a unique identifier so that they were anonymous to all other participants but *known* to the researcher. This *quasi-anonymity* enabled the use a structured reminder process, which included a maximum of three reminders to complete the survey. These reminders were automated within Survey Monkey and resulted in an individualised email reminder being sent to participants who had not completed the survey on pre-determined dates. The process of following up non-respondents was recommended by a number of authors (Keeney, Hasson & McKenna 2001; McKenna 1994). A high response rate across all rounds of the modified Delphi survey was seen as

important in this research project because of the iterative process of building knowledge and consensus about nursing-sensitive patient outcomes and the requirement for participants to participate in the previous round of the survey. A timeframe of two weeks was provided to complete the survey.

5.7.1.5 Data analysis

Data was downloaded from Survey Monkey. Quantitative data was imported into SPSS version 17.0 and descriptive statistics were used to analyse the quantitative data. This included means, standard deviations and level of consensus agreement by participants on the importance rating of each concept (this was presented as a percentage of all participants).

Qualitative data from all participants was collated into a Microsoft Word document and a content analysis was undertaken. This is in keeping with the approach recommended by Powell (2003). Braun and Clarke's (2006) phases of thematic analysis were then used to structure the data analysis. The aim of the qualitative data analysis was to present additional concepts recognised by participants for consideration in subsequent rounds of the modified Delphi survey. While additional concepts were themed, the voice of participants was retained within all additional concepts presented in Round 2 to ensure accuracy of additional concepts as expressed by the participant.

The qualitative data analysis began with repeated reading by researcher of the comments from participants. Statements that were similar (or the same) were grouped together and themes developed around similar concepts. Decisions were then made on whether these similar statements were collapsed into one statement, and if this occurred, a decision was made on which wording to use. Wherever possible the wording used by participants to describe the concept, was used to develop the statement of the concept for the Round 2 survey. Unique statements were also kept and included in the Round 2 survey.

The raw data, the themes and the final collapsed list of concepts to be included in the Round 2 survey was discussed with the research supervisors. This process provided a

mechanism of assessing for, and minimising, researcher bias during these qualitative data analysis procedures.

5.7.2 Round 2 of the modified Delphi survey

After analysing the previous round, a new questionnaire was constructed. Any items that did not achieve consensus agreement in Round 1 were re-presented to participants for their consideration. Feedback was provided to all participants on the mean, standard deviation and level of consensus agreement for all statements within Round 2. This enabled participants to gain an understanding of the group's overall responses to the concepts being measured.

While the Round 2 modified Delphi survey was not pilot tested all other procedures related to administration of the survey, instructions to participants, non-responder follow up and data analysis were identical to those described within the Round 1 modified Delphi survey. The Round 2 modified Delphi survey questionnaire is included as Appendix 12.

5.7.3 Round 3 of the modified Delphi survey

Following analysis of the Round 2 survey, it was found that a large percentage of all concepts presented had achieved consensus. A decision was made at this time that no further consensus rounds to identify concepts were required. It was identified however, that participants may be able to assist in grouping concepts into categories and a Round 3 questionnaire was proposed for this purpose.

The process of conceptually grouping the concepts that achieved consensus in Rounds 1 and 2 of the survey, into categories, was conducted by the researcher and both supervisors. All concepts were themed, and similarly themed concepts were categorised together. Names were given to each category that summarised the concepts within each category. Data from the consumer group interviews were used to name each category wherever possible. A total of eight categories were identified in this process.

All the concepts that had achieved consensus were then allocated into the eight categories and a new questionnaire was constructed. The purpose of the Round 3 survey was to seek agreement from participants on the conceptual groupings of individual concepts into categories. Feedback was provided to all participants on the results of Round 1 and Round 2 of the modified Delphi survey as part of the Round 3 questionnaire. The Round 3 modified Delphi survey questionnaire is included as Appendix 13.

5.7.3.1 Instructions to participants

The Round 3 survey asked participants to provide quantitative and qualitative feedback, on whether the identified concepts could reasonably be categorised into the eight categories identified by the researchers. If a participant did not agree with the categorisation of a concept then they were asked to identify if it could be categorised into a different category and if it could not, what alternative category could be created that it could be included with. Participants were also asked to provide feedback on the name of the category.

5.7.3.2 Data analysis

Analysis of participants' responses to the Round 3 survey in SPSS version 17.0 and thematic analysis of all qualitative fields, showed that participants verified the eight categories.

5.8 Findings

The findings of the modified Delphi survey for each round of the survey are now presented. A summary is provided following the presentation of results from each of the three rounds.

5.8.1 Round 1 of the modified Delphi survey

Round 1 of the modified Delphi survey was conducted in October 2011. The survey was available over a two-week period for participants to complete.

5.8.1.1 Participants

As described in section 5.6, a purposive sample of practicing nurses from a wide cross section of different nursing positions was approached to participate in this phase of the research. All participants were employed as nurses and worked in a geographically diverse area of NSW, Australia. Metropolitan, regional and rural healthcare services are located within the region surveyed. Both public and private sector healthcare organisations were targeted.

A total of 196 participants completed the Round 1 modified Delphi survey. The characteristics of the participants who completed the survey are presented in Table 5.1. Most participants were female (88%), worked in the public healthcare system (84%) were aged over 35 years (66%), and had greater than 15 years' experience as a nurse (73%). There was a wide cross section of different nursing roles amongst participants. This was expected given the sampling frame used to target participants and the promotion of the project to all nurses regardless of role.

Participants were also asked to identify the clinical environment in which they most frequently worked. A breakdown of clinical specialities has been presented in Table 5.2. It is evident from the data presented in this table that a diverse group of nurses participated in the research.

Table 5.1: Characteristics of participants in the Round 1modified Delphi Survey

Characteristics	Number	Percentage (%)
Sex		
Male	23	11.7
Female	172	87.8
No answer	1	0.5
Type of organisation		
Public	165	84.2
Private	31	15.8
Role		
AIN (Assistant in Nursing)	2	1.0
EN / EEN (Enrolled Nurse / Endorsed Enrolled Nurse)	6	3.1
RN (Registered Nurse)	48	24.5
CNS (Clinical Nurse Specialist)	41	20.9
CNE (Clinical Nurse Educator)	12	6.1
CNC (Clinical Nurse Consultant)	21	10.7
NUM (Nurse Unit Manager)	28	14.3
NE (Nurse Educator)	8	4.1
NM (Nurse Manager)	25	12.8
DON (Director of Nursing)	5	2.6
Age		
18-24	8	4.1
25-34	19	9.7
35-44	44	22.4
45-54	78	39.8
55-65	46	23.5
Over 65	1	.5
Years of nursing experience		
0-1	4	2.0
2-3	6	3.1
4-5	7	3.6
6-9	15	7.7
10-14	21	10.7
15-19	27	13.8
20-24	20	10.2
25-30	31	15.8
Over 30	65	33.2

Table 5.2: Characteristics of participants - Specialist area of nursing practice for Round 1 modified Delphi survey participants

Specialist area	Number (n=196)	Percentage (%)
Medical / surgical ward	26	13.3
Community health	7	3.6
Mental health (inpatient and community)	19	9.7
Critical care	12	6.1
Operating theatres / recovery	10	5.1
Management	10	5.1
Oncology / haematology	6	3.1
Rehabilitation / palliative care	29	14.8
Education	6	3.1
Paediatrics	6	3.1
Aged care services	32	16.3
Emergency department	11	5.6
Midwifery	4	2.0
Other	12	6.1
Not specified	6	3.1

5.8.1.2 Identification of important concepts

Fifty-six concepts were presented to participants for ranking of their importance in evaluating the outcomes of nursing care in the Round 1 survey. Participants were asked to rank each concept using a five point Likert scale. The items were:

1 = very important,

2 = important,

3 = neither important nor not important,

4 = not important, and

5 = totally unimportant.

Fifty five of the fifty six concepts presented to participants achieved consensus agreement on their importance at the pre-determined rate of seventy five percent of all participants rating the item as either 1 (very important) or 2 (important). The fifty-five concepts that achieved consensus in Round 1 are presented in Tables 5.3, 5.4 and 5.5. Each of these tables presents the concepts included in the structure, process or outcome categories from the Round 1 survey. The level of agreement on importance (expressed as a percentage), the mean and the standard deviation are presented for each concept.

Four concepts achieved 100% agreement on their importance for measuring nursing practice. These concepts were:

- Patient/client perception of feeling 'safe'
- Patient/client perception of being involved in decision making
- Presence of collaboration between healthcare professionals
- Presence of caring attitudes and actions

A large number of concepts (42) achieved 95% agreement on their importance. This means that of the 196 participants, 95% of all participants (186 people) rated these forty-two concepts as important for measuring the outcomes of nursing practice.

One item did not achieve consensus agreement in the Round 1 survey. This means that less than 75% of participants ranked it as either very important or important. This item was labelled as 'Number of Referrals' and only 68.4% of participants rated this item as 'important'. Table 5.6 presents the results of the data analysis for this concept.

Table 5.3: Structural measures that achieved consensus agreement on importance in the Round 1 modified Delphi survey

Structural measures	Level of agreement on importance (%)	Mean	Standard Deviation
Patient characteristics			
Patient acuity	98.0	1.28	.514
Diagnosis Related Group (DRG)	83.7	1.80	.755
Casemix information	79.6	1.95	.770
Ward / department type	82.0	1.9	.762
Patient turnover	83.1	1.88	.840
Nurse characteristics			
Hours of available nursing care	98.5	1.27	.528
Skill mix of nursing staff	99.5	1.16	.380
Education of nursing staff	99.5	1.28	.462
Experience of nursing staff	99.0	1.27	.466
Number of casual staff	84.0	1.74	.781
Number of agency staff	76.2	1.95	1.115
Organisational characteristics			
Type of organisation	76.7	1.99	.688
Model of care in use	89.7	1.65	.659
Nursing work environment	97.9	1.33	.513
Management support	99.5	1.20	.438
Relationships with nursing colleagues	97.9	1.35	.585
Relationships with other health professionals	97.4	1.42	.545

Table 5.4: Process measures that achieved consensus agreement on importance in the Round 1 modified Delphi survey

Process measures	Level of agreement on importance (%)	Mean	Standard Deviation
Patient/client perceptions			
Patient/client perceptions of care	99.0	1.31	.506
Patient/client perceptions of feeling 'safe'	100.0	1.16	.372
Patient/client perceptions of feeling 'cared for'	99.0	1.19	.416
Patient/client perceptions of being involved in decision making	100.0	1.25	.433
Concepts related to the process of care			
Risk management strategies	95.9	1.47	.595
Presence of a safety culture	99.0	1.35	.500
Falls prevention strategies	97.9	1.42	.581
Pressure ulcer prevention strategies	95.9	1.45	.691
Processes for safe administration of medications	99.5	1.19	.466
Hand hygiene practices	98.5	1.22	.452
Presence of collaboration between healthcare professionals	100.0	1.35	.477
Presence of teamwork	99.5	1.21	.418
Presence of caring attitudes and actions	100.0	1.18	.386
A person centred approach to care	98.4	1.20	.440

Table 5.5: Outcome measures that achieved consensus agreement on importance in the Round 1 modified Delphi survey

Outcome measures	Level of agreement on importance (%)	Mean	Standard Deviation
Safety outcomes			
Number of patient / client falls	94.8	1.56	.593
Number of falls with injury	95.3	1.46	.604
Pressure ulcer prevalence	95.8	1.57	.651
Hospital acquired pressure ulcers	95.3	1.38	.654
Medication errors	99.0	1.17	.402
Hospital acquired infections	96.4	1.33	.589
Central line associated blood stream infections	93.2	1.38	.734
Peripheral IV associated blood stream infections	93.2	1.38	.721
Failure to rescue	89.1	1.57	.796
Mortality rates	87.5	1.69	.809
Patient/client perceptions or satisfaction			
Patient/client perceptions of nursing care	97.4	1.42	.591
Overall satisfaction with nursing care	97.9	1.42	.582
Patient/client satisfaction with planning for discharge	96.9	1.52	.646
Patient/client satisfaction with pain management	98.4	1.24	.461
Patient/client satisfaction with education from nurses	97.4	1.46	.595
Patient/client satisfaction with individual focus of care	97.9	1.43	.537
Quality of care indicators			
Improvements to functional status	95.3	1.56	.584
Improved quality of life	98.4	1.34	.507
Reduction / relief of symptoms	98.4	1.28	.484
Patient/client participation in self-care	98.4	1.44	.528
Patient understanding of disease process	97.4	1.55	.549
Chronic disease management strategies in place and understood	97.9	1.46	.540
Timely and successful referral to other health professionals	98.4	1.4	.521
Successful discharge	95.2	1.45	.631

Table 5.6: Concepts that did not achieve consensus agreement on importance in the Round 1 modified Delphi survey

	Level of agreement on importance (%)	Mean	Standard Deviation
Structural measure: Nurse characteristics			
Number of referrals	68.4	2.19	.917

5.8.1.3 Identification of additional concepts from participants

A large number of comments were made by participants in Round 1 of the modified Delphi survey. These comments were related to the following domains:

- Structural measures – Patient characteristics
- Structural measures – Nurse characteristics
- Structural measures – Organisational characteristics
- Process measures – Patient perceptions
- Process measures – Concepts related to the process of care
- Outcome measures – Safety outcomes
- Outcome measures – Patient perceptions / satisfaction
- Outcome measures – Quality of care indicators
- General comments on survey

Using the content analysis procedure described in 5.6.1.5, similar comments were grouped together and collapsed where possible. Unique statements were then identified. As a result of this analysis, fifty-two new concepts for inclusion in the round 2 survey were identified. Each of these statements is outlined in the following section.

5.8.1.3.1 Structural measures – Patient characteristics

Nine new concepts in the theme of patient characteristics were identified. They were:

- Patient's age
- Patient's cultural background and / or language spoken at home
- Family involvement in care
- Pre-admission quality of life

- Pre-admission level of independence / dependence
- Cognitive status
- Patient's expectations regarding healthcare intervention
- Patient's willingness to participate in care
- Presentation to hospital e.g. emergency, elective

5.8.1.3.2 Structural measures – Nurse characteristics

Nine new concepts in the theme of nurse characteristics were identified. They were:

- Nursing overtime worked
- Nurse to patient ratio
- Competency of staff
- Staff retention (e.g. resignations and recruitment)
- Leadership of unit
- Well-being of nursing staff
- Nursing culture
- Staff cultural and language background
- Physical fitness of nursing staff

5.8.1.3.3 Structural measures – Organisational characteristics

Nine new concepts in the theme of organisational characteristics were identified. They were:

- Organisational culture
- Organisational commitment to providing best practice
- Organisational commitment to person-centred care
- Utilisation of evidence based practice within organisation
- Affiliation with research / academic unit
- Presence / availability of members of the multidisciplinary team
- Presence / availability of auxiliary staff in unit
- Presence / availability of after-hours education and support
- Management experience and qualifications

5.8.1.3.4 Process measures – Patient perceptions

Six new concepts in the theme of patient perceptions related to the process of care were identified. They were:

- Patient perception that care is appropriate / best practice
- Patient perception of communication with nurses
- Patient perceptions of 'being heard'
- Patient perception of 'being informed' about nursing care
- Patient perception of trust in nurses
- Family perception of being involved in decision making (where relevant)

5.8.1.3.5 Process measures – Concepts related to the process of care

Six new concepts in the theme of concepts related to the process of care were identified. They were:

- Continuity of care within and between wards, departments and follow-up services
- Communication processes within unit (e.g. handover)
- Documentation of nursing assessment within the medical record
- Documentation of nursing care that is delivered within the medical record
- Documentation of comprehensive physical and mental health assessment
- Delirium prevention strategies

5.8.1.3.6 Outcome measures – Safety outcomes

Four new concepts in the theme of safety outcomes were identified. They were:

- Incidence of delirium post admission
- Incidence of self-harm post admission
- Unplanned readmissions
- Number of clinical incidents / near misses

5.8.1.3.7 Outcome measures – Patient perceptions / satisfaction

Seven new concepts in the theme of patient perceptions and / or satisfaction with the outcomes of care were identified. They were:

- Patient perception of whether their expectations of healthcare intervention have been met
- Patient satisfaction related to communication with nurses
- Patient satisfaction with management of incidents and / or complaints
- Patient satisfaction with support provided to family / carers
- Patient satisfaction with cultural awareness of nursing staff
- Family satisfaction with involvement in care (where relevant)
- Family satisfaction with information provided by nursing staff (where relevant)

5.8.1.3.8 Outcome measures – Quality of care indicators

Two new concepts in the theme of quality of care indicators were identified. They were:

- Length of stay
- Patient education about discharge medications

5.8.1.4 Development of the Round 2 survey

The Round 2 survey was developed following identification of the one concept to be re-presented to participants and the fifty-two new concepts developed from the data analysis of comments by participants in the Round 1 survey. The same process and format was used to develop the Round 2 survey as was used to develop the Round 1 survey and Survey Monkey was used to administer it.

Feedback to participants on the results from the Round 1 survey was incorporated into the Round 2 survey design. Feedback was provided on the mean, standard deviation and level of consensus agreement for all statements within Round 1. This enabled participants to gain an understanding of the group's overall responses to the concepts being measured.

5.8.2 Round 2 of the modified Delphi survey

The Round 2 modified Delphi survey was conducted over a two-week period in late October and early November 2011.

5.8.2.1 Participants

The Round 2 survey was administered to the 196 participants who completed the Round 1 survey. The use of the same people who had already participated in the Round 1 survey was seen as important in building knowledge on the topic. 169 of the 196 potential participants completed the Round 2 survey, which equates to a response rate of 86%.

5.8.2.2 Identification of important concepts

Fifty-three concepts were presented to participants for ranking of their importance in evaluating the outcomes of nursing care within the Round 2 survey. Participants were asked to rank each concept using the same five point Likert scale that was used in the Round 1 survey.

One of the items presented was the item that did not achieve consensus agreement on its importance in Round 1. This item was relabelled from 'Number of referrals' to 'Caseload' based upon feedback from participants. This item subsequently achieved consensus agreement on its importance in Round 2. Slightly more than sixty-eight percent (68.4%) of participants rated it as 'important' in Round 1 and this moved to 95.3% of participants rating the concept as important in Round 2.

Of the 52 new concepts presented to participants in Round 2, forty-seven concepts achieved consensus agreement on their importance at the pre-determined rate of seventy five percent of participants rating the item as either 1 (very important) or 2 (important). The forty-seven concepts that achieved consensus in Round 2 are presented in Table 5.7, Table 5.8 and Table 5.9. Each of these tables presents the concepts included in the structural, process or outcome categories from the Round 2 survey. The level of agreement on importance (expressed as a percentage), the mean and the standard deviation are presented for each concept.

Table 5.7: Structural measures that achieved consensus agreement on importance in the Round 2 modified Delphi survey

Structural measures	Level of agreement on importance (%)	Mean	Standard Deviation
Patient characteristics			
Family involvement in care	91.7	1.72	.647
Pre-admission quality of life	92.9	1.65	.667
Pre-admission level of independence / dependence	95.9	1.52	.598
Cognitive status of patient	95.9	1.47	.646
Patient expectations regarding healthcare intervention	92.9	1.67	.713
Patient's willingness to participate in care	98.8	1.46	.577
Nurse characteristics			
Nursing overtime worked	89.9	1.59	.720
Nurse to patient ratio	98.2	1.21	.502
Competency of staff	98.2	1.20	.470
Staff turnover (e.g. resignations and recruitment)	93.5	1.57	.633
Leadership of unit	100	1.16	.367
Well-being of nursing staff	97.6	1.29	.505
Nursing culture	98.2	1.32	.506
Physical fitness of nursing staff	82.8	1.96	.693
Organisational characteristics			
Organisational culture	97.0	1.45	.555
Organisational commitment to providing best practice	98.8	1.29	.481
Organisational commitment to providing person-centred care	97.0	1.39	.548
Utilisation of evidence based practice within organisation	96.4	1.44	.586
Presence / availability of members of the multidisciplinary team	95.8	1.44	.576
Presence / availability of auxiliary staff in unit	88.0	1.84	.630
Presence / availability of after-hours education and support	92.9	1.69	.638
Management experience and qualifications	94.6	1.55	.617

Table 5.8: Process measures that achieved consensus agreement on importance in the Round 2 modified Delphi survey

Process measures	Level of agreement on importance (%)	Mean	Standard Deviation
Patient perceptions			
Patient perception that care is appropriate / best practice	95.2	1.47	.589
Patient perceptions of communication with nurses	99.4	1.31	.476
Patient perceptions of 'being heard'	99.4	1.25	.448
Patient perception of 'being informed' about nursing care	99.4	1.26	.454
Patient perception of trust in nurses	98.2	1.28	.488
Family perception of being involved in decision making (where relevant)	98.9	1.44	.576
Concepts related to the process of care			
Continuity of care provided to patient	98.8	1.39	.514
Communication processes within unit (e.g. handover)	100	1.18	.389
Documentation of nursing assessment within medical record	98.2	1.28	.488
Documentation of nursing care within medical record	98.8	1.26	.493
Documentation of a comprehensive physical and mental health assessment	98.8	1.37	.565
Delirium prevention strategies	93.4	1.62	.656

Table 5.9: Outcome measures that achieved consensus agreement on importance in the Round 2 modified Delphi survey

Outcome measures	Level of agreement on importance (%)	Mean	Standard Deviation
Safety outcomes / Quality of care indicators			
Incidence of delirium post admission	88.1	1.73	.679
Incidence of self-harm post admission	88.7	1.68	.686
Unplanned readmissions	85.6	1.74	.730
Number of clinical incidents / near misses	95.2	1.46	.588
Length of stay	79.8	2.00	.797
Patient education about discharge medications	97	1.36	.561
Patient perceptions / satisfaction			
Patient perception of whether their expectations of their healthcare intervention have been met	97.6	1.55	.545
Patient satisfaction related to communication with nurses	98.8	1.43	.575
Patient satisfaction with management of incidents and / or complaints	97.0	1.46	.578
Patient satisfaction with support provided to family / carers	95.8	1.58	.624
Patient satisfaction with cultural awareness of nursing staff	94.0	1.70	.681
Family satisfaction with involvement in care (where relevant)	97.6	1.55	.597
Family satisfaction with information provided by nursing staff (where relevant)	97.6	1.53	.568

Two concepts achieved 100% agreement on their importance. These concepts were:

- Leadership of unit
- Communication processes within unit, (e.g. handover)

A large number of concepts (forty-three) achieved 95% agreement on their importance. This means that of the 169 participants, 95% of all participants (160 people) rated these forty-three concepts as important for measuring the outcomes of nursing practice.

Five items did not achieve consensus agreement in the Round 2 survey. This means that less than 75% of participants ranked them as either very important or important. These items were:

- Patient's age
- Patient's cultural background and/or language spoken at home
- Presentation to hospital e.g. emergency, elective
- Staff cultural and language background
- Affiliation with research / academic unit

The results of the data analysis for these concepts are presented in Table 5.10.

Table 5.10: Outcome measures that did not achieve consensus agreement on importance in the Round 2 modified Delphi survey

	Level of agreement on importance (%)	Mean	Standard Deviation
Structural measures: Patient characteristics			
Patient's age	66.1	2.13	.899
Patient's cultural background and/or language spoken at home	73.2	2.08	.889
Presentation to hospital e.g. emergency, elective	68.0	2.14	.872
Structural measures: Nurse characteristics			
Staff cultural and language background	74.0	2.03	.827
Structural measures: Organisational characteristics			
Affiliation with research / academic unit	71.4	2.10	.731

5.8.2.3 Analysis of qualitative comments from participants

Only a small number of comments were made by participants in Round 2 of the modified Delphi survey. These comments were made within a general comments field at the end of the survey. No additional concepts were proposed by participants. The comments that were made mostly sought clarity around a concept or provided feedback to the researcher on the participant's impressions of a concept or their view on the research more broadly.

5.8.2.4 Development of Round 3 modified Delphi survey

Following analysis of the Round 2 survey, it was found that a large percentage of all concepts presented had achieved consensus. A decision was made at this time that no further consensus rounds were required. It was identified however, that participants might be able to assist in grouping concepts into categories and a Round 3 questionnaire was thus proposed.

The process of conceptually grouping the concepts that achieved consensus in Rounds 1 and 2 of the survey, into categories was conducted by the researcher and both supervisors. All concepts were themed, and similarly themed concepts were categorised together. This was achieved through discussion of each concept and the use of a workshop with the research supervisors to develop themes across and within the structure, process and outcome framework used in the Round 1 and Round 2 surveys. Images from this workshop are included as Figures 5.3, 5.4 and 5.5.

Once themes had been developed, names were given to each category that summarised the concepts within the category. Data from the consumer group interviews was used to inform the name of each category wherever possible. A total of eight categories were identified:

- Care and Caring
- Communication
- Collaboration
- Safety
- Patient characteristics
- Workload
- Nurses work environment
- Organisational characteristics

All the concepts that had achieved consensus in Rounds 1 and 2 of the modified Delphi survey were then allocated into the eight categories and a new questionnaire was constructed. The purpose of the Round 3 survey was to seek agreement from participants on the conceptual groupings of individual concepts into categories.

Feedback was provided to all participants on the results of Round 1 and Round 2 of the survey as part of the Round 3 questionnaire.

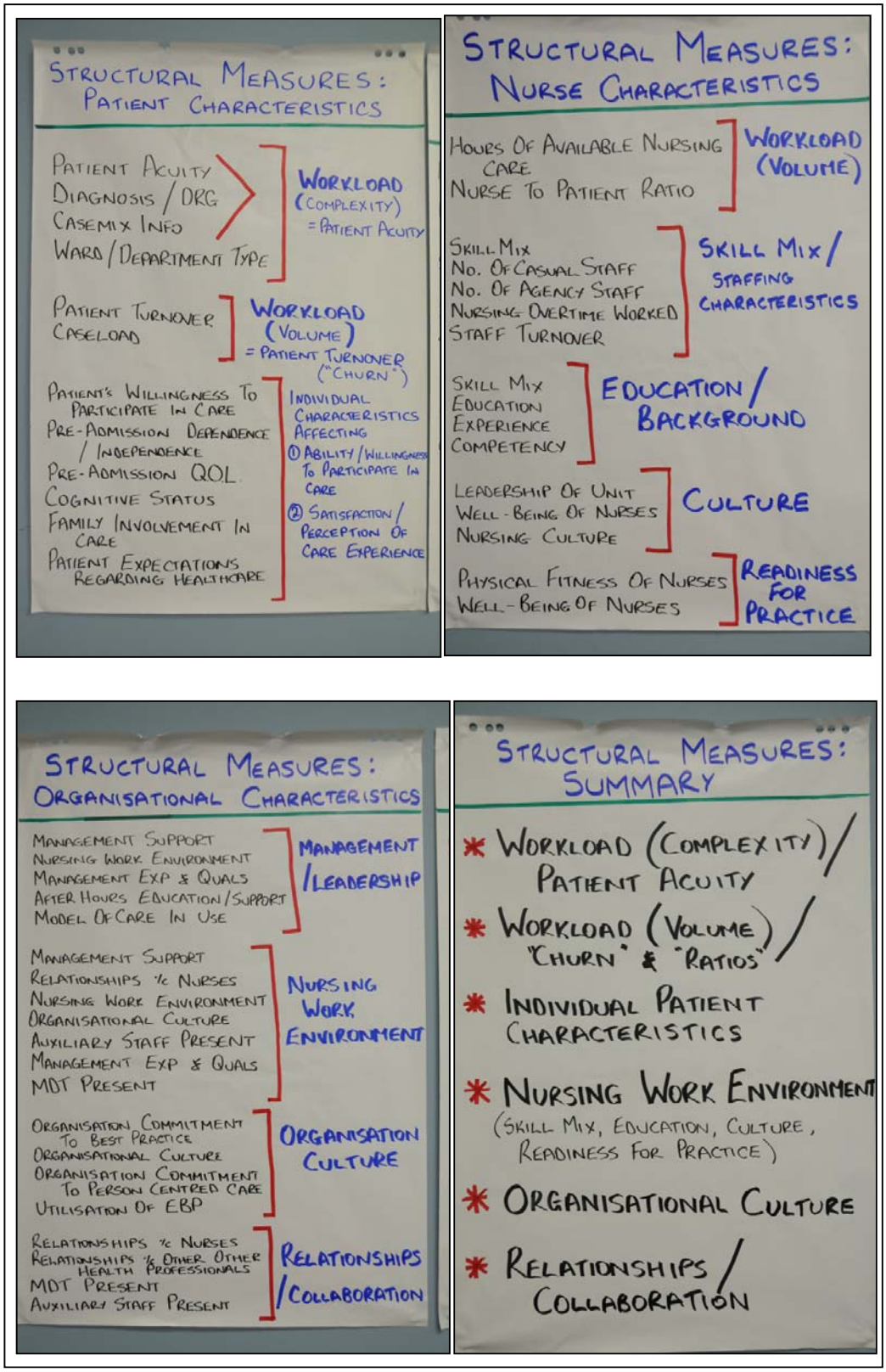

Figure 5.3: Images of structural measures from the workshop to theme and categorise concepts from Rounds 1 and 2 of the modified Delphi survey

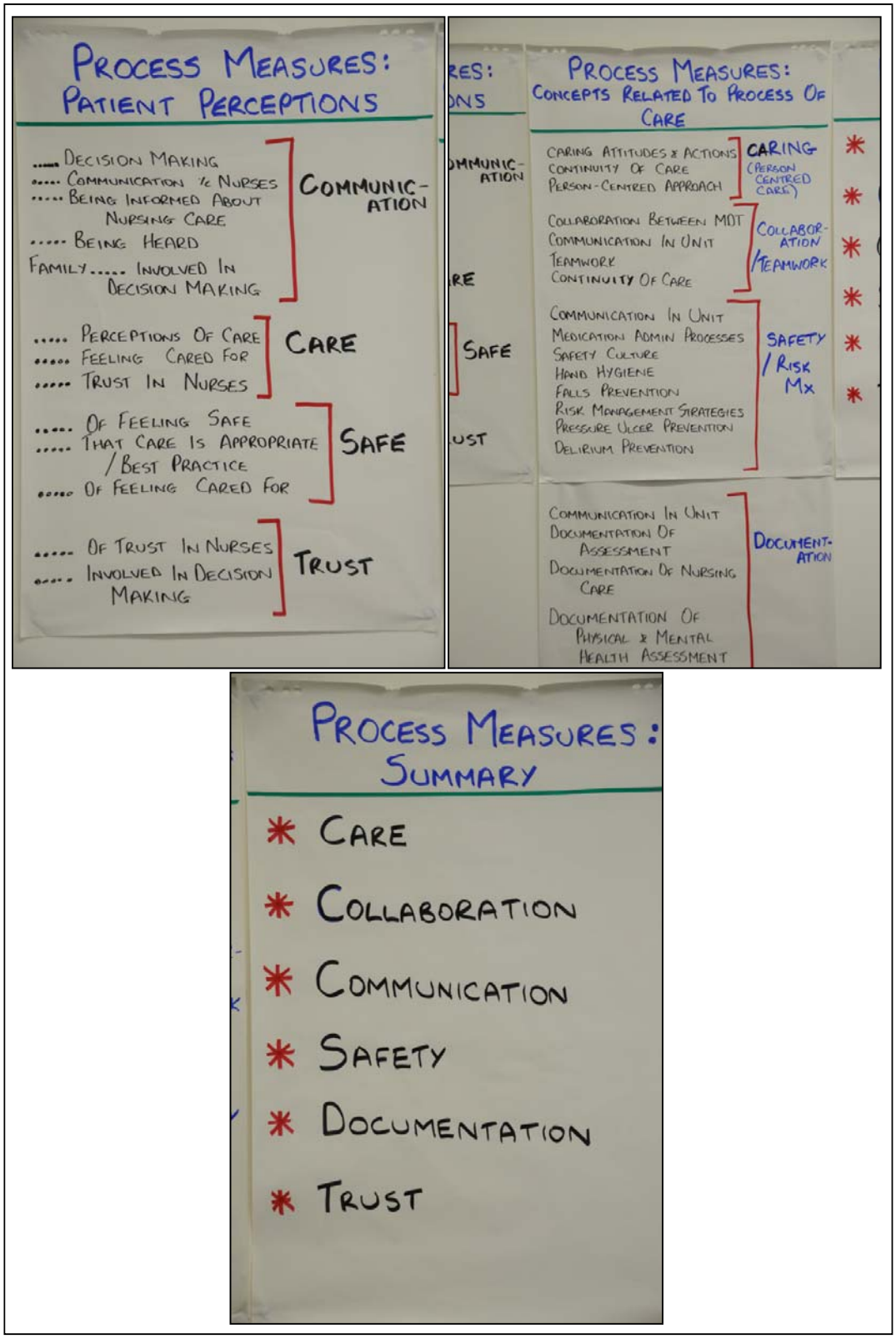

Figure 5.4: Images of process measures from the workshop to theme and categorise concepts from Rounds 1 and 2 of the modified Delphi survey

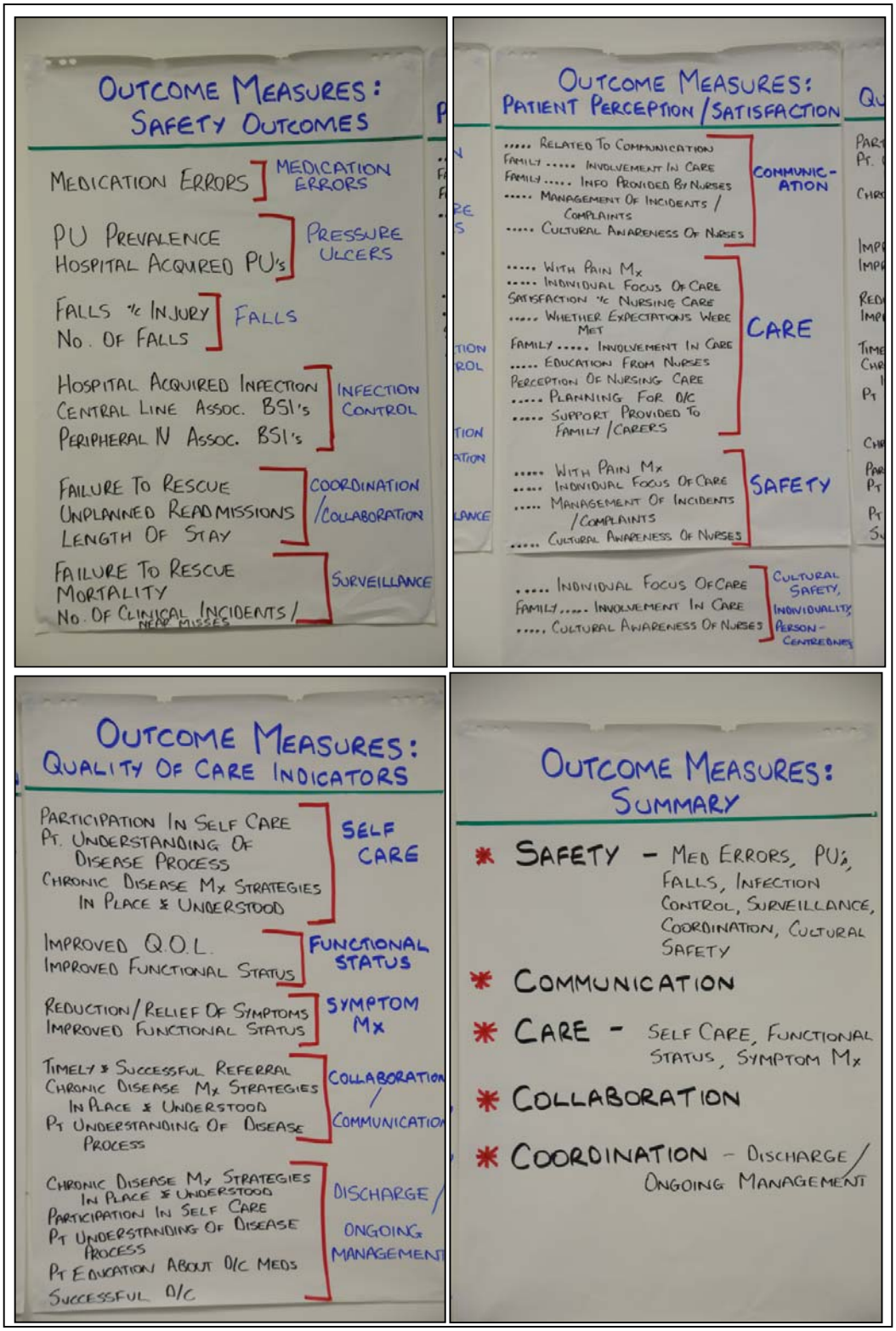

Figure 5.5: Images of outcome measures from the workshop to theme and categorise concepts from Rounds 1 and 2 of the modified Delphi survey

5.8.3 Round 3 of the modified Delphi survey

The Round 3 modified Delphi survey was conducted over a two-week period in April 2012.

5.8.3.1 Participants

The Round 3 survey was administered to the 169 participants who completed the Round 2 survey. The use of the same people who had already participated in the Round 1 and Round 2 surveys was seen as important in being able to categorise the concepts presented. 128 of the 169 potential participants completed the survey although not all participants answered each question. The number of responses varied by question with a range of 113 to 128 participants completing all questions. The maximum total number of 128 participants equates to a response rate of 76% from Round 2 and 65% from the total number of participants in Round 1.

5.8.3.2 Categorising the concepts

The data from the Round 3 survey is presented by category. It includes descriptive statistics, assessment of concepts that did not achieve 75% agreement on category placement and an analysis of the qualitative feedback provided by participants.

5.8.3.2.1 Care and Caring

Participants were asked to indicate within the survey whether each of the individual concepts within the category of Care and Caring could reasonably be categorised under that heading and grouped together. Participants were asked to indicate whether they agreed (or not) with the concept being placed into the category. Participants were also asked to indicate which category (if any) the concept could be categorised into if they did not agree that it should be within the Care and Caring category. Each of the concepts within the category, the number of participants answering the question, the percentage of participants indicating whether it fits within this category and the percentage of participants indicating that it did not fit in the category are presented in Table 5.11.

Table 5.11: Descriptive statistics for categorising concepts within Care and Caring

Concepts within Care and Caring	Number	Fits in category (%)	Does not fit in category (%)
Presence of caring attitudes and actions	128	98.4	1.6
Patient / client perceptions of care	127	92.2	7.0
Patient / client perception of feeling 'cared for'	127	94.5	4.7
A person centred approach to care	128	93.0	7.0
Overall satisfaction with nursing care	127	85.2	14.2
Patient perception of nursing care	128	85.9	14.1
Patient satisfaction with individual focus of care	127	85.8	14.1
Patient perception of whether their expectation of their healthcare intervention have been met	128	74.2	25.8
Patient satisfaction with pain management	126	89.8	8.6
Patient satisfaction with education from nurses	125	85.2	12.5
Patient understanding of disease process	126	67.2	31.3
Patient satisfaction with support provided to family/carers	126	85.2	13.3
Family satisfaction with involvement in care (where relevant)	126	82.8	15.6
Patient / client participation in self-care	126	84.4	14.1
Improved quality of life	126	84.4	14.1
Reduction / relief of symptoms	126	89.1	9.4
Improvements to functional status	123	75.8	20.3

As you can see from Table 5.11, a majority of participants indicated that all the concepts canvassed could reasonably be categorised under the heading of Care and Caring. Most concepts (15 of 17) received greater than seventy-five percent consensus agreement, that the concept could reasonably be categorised under the heading of Care and Caring.

The other two concepts (Patient perception of whether their expectations of their healthcare intervention have been met; and, Patient understanding of disease process)

were further analysed to determine what other categories participants suggested they could be categorised in. The results of this analysis are presented in Figure 5.6 and 5.7.

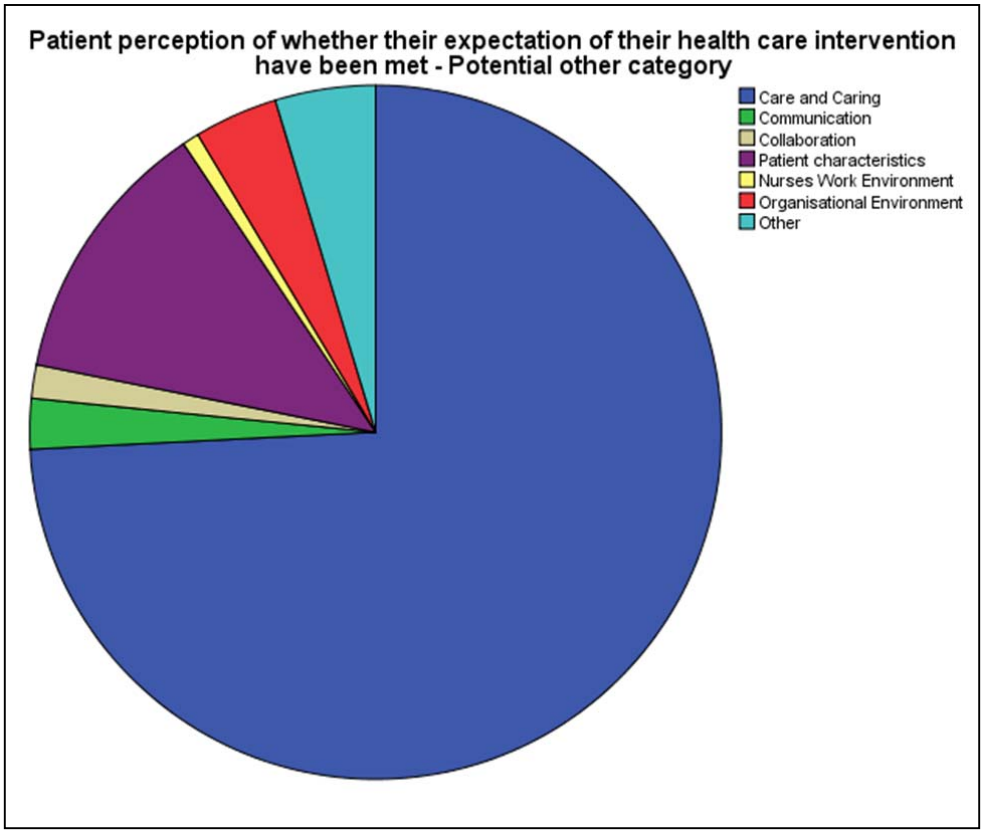

Figure 5.6: Analysis of potential categories for 'Patient perception of whether their expectation of their healthcare intervention have been met'

Figure 5.6 illustrates that twenty-two (of a potential 124) participants categorised the concept 'Patient perception of whether their expectations of their healthcare intervention have been met' into the category of Patient Characteristics. Qualitative analysis of the other potential categories nominated by participants indicated that categories such as patient satisfaction, patient / care satisfaction, and healthcare evaluation were proposed. A number of participants who indicated that it did not fit under any category and thus nominated 'other' did not provide a description or title of what this 'other' category should be. Following review of the data, given that the majority of participants categorised this concept into Care and caring it was decided that it would remain within this theme.

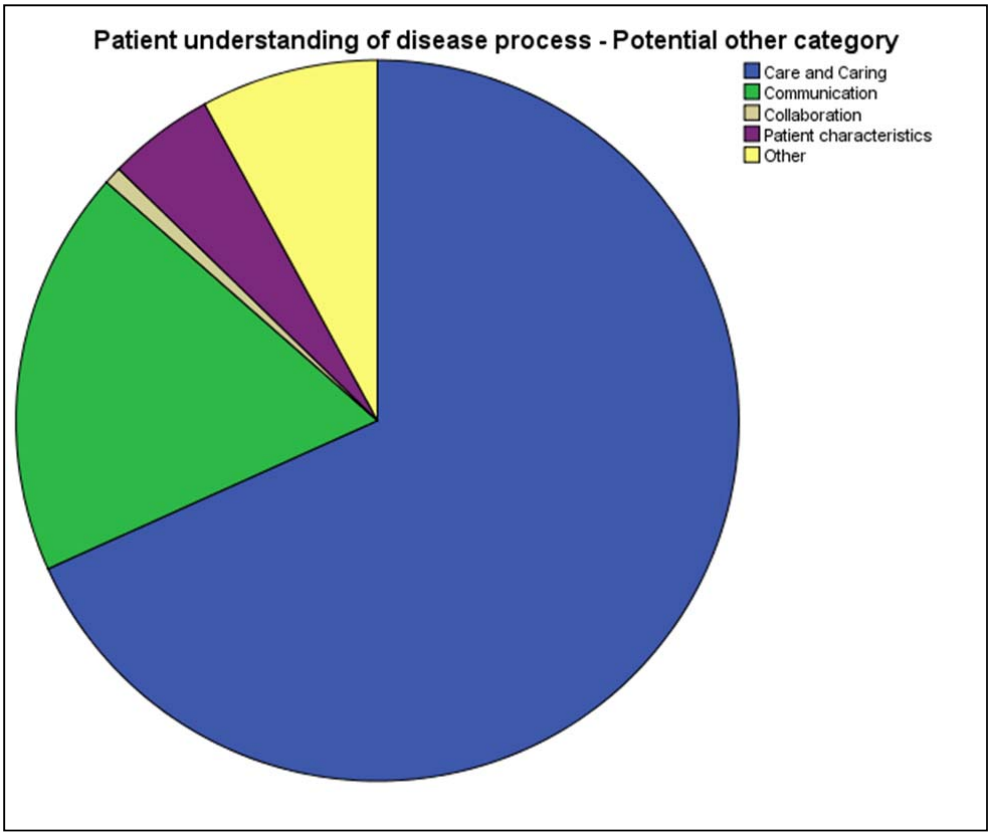

Figure 5.7: Analysis of potential categories for 'Patient understanding of disease process'

Figure 5.7 illustrates that forty-one (out of a potential 117) participants categorised the concept 'Patient understanding of disease process' into the category of Communication. Qualitative analysis of the other potential categories nominated by participants indicated that categories such as healthcare evaluation, patient knowledge and learning and development were proposed. As previously described, a number of participants who indicated that it did not fit under any category and had nominated 'other' did not provide a description or title of what this other category should be. Following review of the data, given that the majority of participants categorised this concept into Care and Caring it was decided that it would remain within this theme.

Participants were also asked to provide qualitative data about whether the heading of Care and Caring adequately summarised and encapsulated the concepts presented within it. Fifty-one participants responded to this question and most responses indicated that

the heading was appropriate. Other suggestions included ‘developing a therapeutic relationship’, ‘holistic care’, ‘caring’, ‘nursing care and caring’. Following analysis of these responses the heading of Care and Caring was preserved.

Within these qualitative comments, some participants also provided data to clarify the category. Some examples of these comments are included below:

> *Care and Caring covers the interaction between the nurse and patient, the nurse and family/support people and the patient and support people. (Participant 58).*

> *Care identifies the hands on /doing work. Caring is an inherent quality that is hard to measure. It may not be felt by the patient but may still be expressed by the nurse. Not necessarily verbally or physically tangible but internally/emotive. (Participant 73.*

These comments identify the breadth of the concepts within Care and Caring and the complexity inherent in measuring them as a concept. It is recognised that organising groups of concepts into a category is not an exact process and that many of these concepts overlap multiple categories. It is also acknowledged that the process of categorising them is a subjective one.

5.8.3.2.2 Communication

As with the category of Care and Caring, participants were asked to indicate within the survey whether each of the individual concepts within the category of Communication could reasonably be categorised under that heading and grouped together. The data for the category of Communication is presented in Table 5.12.

As you can see from Table 5.12, all concepts (13 in total) received greater than seventy-five percent of all participants agreeing that the concept could reasonably be categorised under the heading of Communication.

Table 5.12: Descriptive statistics for categorising concepts within Communication

Concepts within Communication	Number	Fits in category (%)	Does not fit in category (%)
Patient / client perception of being involved in decision making	123	90.6	5.5
Patient /client perception of communication with nurses	123	93	3.1
Patient / client perception of 'being informed' about nursing care	123	91.4	4.7
Patient / client perception of 'being heard'	123	93	3.1
Patient perception of trust in nurses	123	77.3	18.8
Family perception of being involved in decision making (where relevant)	121	87.5	7
Patient satisfaction related to communication with nurses	123	93.8	2.3
Family satisfaction with information provided by nursing staff (where relevant)	123	92.2	3.9
Patient satisfaction with management of incidents and / or complaints	123	86.7	9.4
Patient satisfaction with cultural awareness of nursing staff	123	80.5	15.6
Documentation of comprehensive physical and mental health assessment	123	87.5	8.6
Documentation of nursing assessment within the medical record	123	87.5	8.6
Documentation of nursing care within medical record	123	90.6	5.5

Participants were also asked to provide qualitative data about whether the heading of Communication adequately summarised and encapsulated the concepts presented within it. Forty-three participants responded to this question and most responses indicated that the heading was appropriate.

Within these qualitative comments, some participants provided data to clarify the category. Some examples of these comments are included below:

> *This covers all areas of communication including verbal, non-verbal and documented forms of communication. All areas questioned are imperative to a good sound basis of communication. (Participant 58).*

> *Communication is more than verbal and I am pleased there seems a greater appreciation of the concept. (Participant 74).*

One participant posed a question in their qualitative response:

> *Is there a possible difference between communication with the patient (which is the main focus here) AND communication within the team (which might follow under 'collaboration'? (Participant 44).*

This question highlights the potential overlap in the categories of Communication and Collaboration and the subjective process of conceptualising these themes and headings. It is evident from this and the response of participants that aspects of these concepts do overlap.

5.8.3.2.3 Collaboration

As with previous categories, participants were asked to indicate within the survey whether each of the individual concepts within the category of Collaboration could reasonably be categorised under that heading and grouped together. The data for the category of Collaboration is presented in Table 5.13.

All concepts within Collaboration (eleven in total) received greater than seventy five percent of all participants agreeing that the concept could reasonably be categorised within the heading of Collaboration.

As with previous categories, participants were also asked to provide qualitative data about whether the heading Collaboration adequately summarised and encapsulated the concepts presented within it. Thirty-six participants responded to this question and all responses indicated that the heading was appropriate. No other suggestions were made for the category name of Collaboration.

Table 5.13: Descriptive statistics for categorising concepts within Collaboration

Concepts within Collaboration	Number	Fits in category (%)	Does not fit in category (%)
Presence of collaboration between healthcare professionals	121	94.5	5.5
Presence of teamwork	121	98.3	1.7
Relationships with nursing colleagues	119	93.3	6.7
Relationships with other health professionals	120	95.0	5.0
Continuity of care provided to patient	121	91.7	8.3
Communication processes within unit (e.g. handover)	120	79.2	20.8
Timely and successful referral to other health professionals	121	90.1	9.9
Patient satisfaction with planning for discharge	121	86.0	14.0
Chronic disease management strategies in place and understood	120	85.0	15.0
Patient education about discharge management	121	85.1	14.9
Successful discharge	119	88.2	11.8

Within the qualitative comments on Collaboration, some participants also identified the subjective boundaries between Communication and Collaboration. This was particularly evident in the following comments:

> *Some of these overlapped with communication in my opinion. (Participant 5).*
>
> *Some of these would fall in both Communication and Collaboration categories. (Participant 60).*

As a result of this feedback and to improve understanding of the differences between these two categories, a decision was made to change the heading of Collaboration to Coordination and Collaboration. This encapsulates the role of the nurse to collaborate with other members of the team and in the absence of other members of the team during after-hours periods, coordinate care and provide feedback on the patient and their progress.

5.8.3.2.4 Safety

Participants were asked to indicate within the survey whether each of the individual concepts within the category of Safety could reasonably be categorised under that heading and grouped together. The data for the category of Safety is presented in Table 5.14.

Participants indicated that most concepts could reasonably be categorised into the heading of Safety. Most concepts (22 of 24) received greater than seventy-five percent of all participants agreeing that the concept could reasonably be categorised within the heading of Safety.

Two concepts (unplanned readmissions; and length of stay) were further analysed to determine what other categories participants suggested they could be categorised in. The results of this analysis are presented in Figures 5.8 and 5.9.

Figure 5.8 illustrates that thirty-three (out of a potential 104) participants categorised the concept 'Unplanned readmissions' into the range of categories available to them. Qualitative analysis of the other potential categories nominated by participants indicated that participants were unsure what category to use for this concept. Most participants who indicated that it did not fit under any category and had nominated 'other' did not provide a description or title of what this other category should be. For those who provided qualitative data about this, the data indicated that the participants appeared to be struggling with the concept and whether it is influenced by nursing care. The following quotes from participants illustrate this point.

The control of categories unplanned readmissions and length of stay aren't really within the registered nurse's scope of practice. (Participant 20).

I am not really sure about length of stay or unplanned readmissions, however, I don't believe that they appropriately fit into any of the categories provided. (Participant 34).

Following a review of the data, given that the majority of participants categorised 'Unplanned readmissions' into Safety and there was no clear alternative category identified, it was decided that it would remain within this theme.

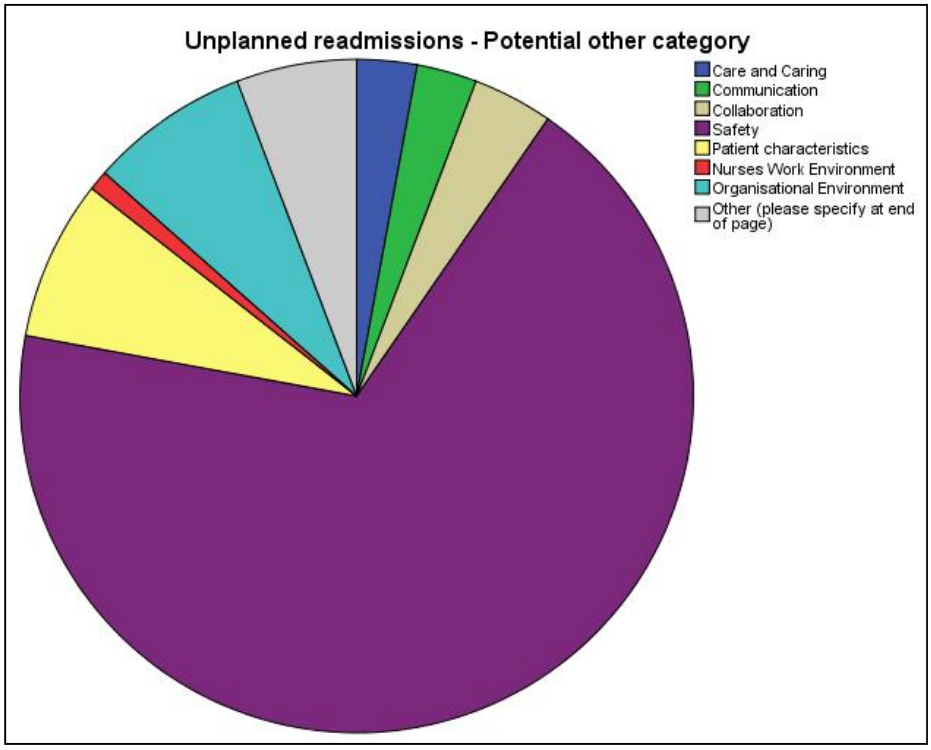

Figure 5.8: Analysis of potential categories for 'Unplanned readmissions'

Table 5.14: Descriptive statistics for categorising concepts within Safety

Concepts within Safety	Number	Fits in category (%)	Does not fit in category (%)
Patient / client perception of feeling "safe"	117	93.2	6.8
Patient perception that care is appropriate / best practice	118	84.7	15.3
Processes for safe administration of medications	118	97.5	2.5
Medication errors	118	93.2	6.8
Hand hygiene practices	118	97.5	2.5
Hospital acquired infections	118	93.2	6.8
Central line associated blood stream infections	118	93.2	6.8
Peripheral IV associated blood stream infections	118	94.1	5.9
Falls prevention strategies	118	98.3	1.7
Number of falls with injury	118	93.2	6.8
Number of patient / client falls	118	91.5	8.5
Risk management strategies	118	98.3	1.7
Pressure ulcer prevention strategies	118	91.5	8.5
Pressure ulcer prevalence	116	82.8	17.2
Hospital acquired pressure ulcers	117	85.5	14.5
Delirium prevention strategies	118	92.4	7.6
Incidence of delirium post admission	118	94.1	5.9
Incidence of self-harm post admission	117	93.2	6.8
Presence of a safety culture	118	96.6	3.4
Failure to rescue	116	79.3	20.7
Mortality rates	117	75.2	24.8
Unplanned readmissions	117	69.2	30.8
Length of stay	116	57.8	42.2
Number of clinical incidents / near misses	116	94.0	6.0

Figure 5.9 illustrates a similar result for the concept of ‘Length of stay’. Qualitative analysis of the other potential categories nominated by participants indicated that no alternative suggestions were made. As previously described for the analysis of ‘Unplanned readmissions’, a number of participants who indicated that it did not fit under any category and had nominated ‘other’ did not provide a description or title of what this other category should be. They appeared to be grappling with the concept and its ability to be used to measure nursing practice. This is evident in the following comments:

> *Length of stay is often not indicative of safety strategies as numerous co-morbidities often present, which 'skews' this outcome. (Participant 5).*

> *Length of stay is not linked to safety – it is an outcome of care. (Participant 28).*

Given that the majority of participants categorised this concept into Safety it was decided that it would remain within this theme.

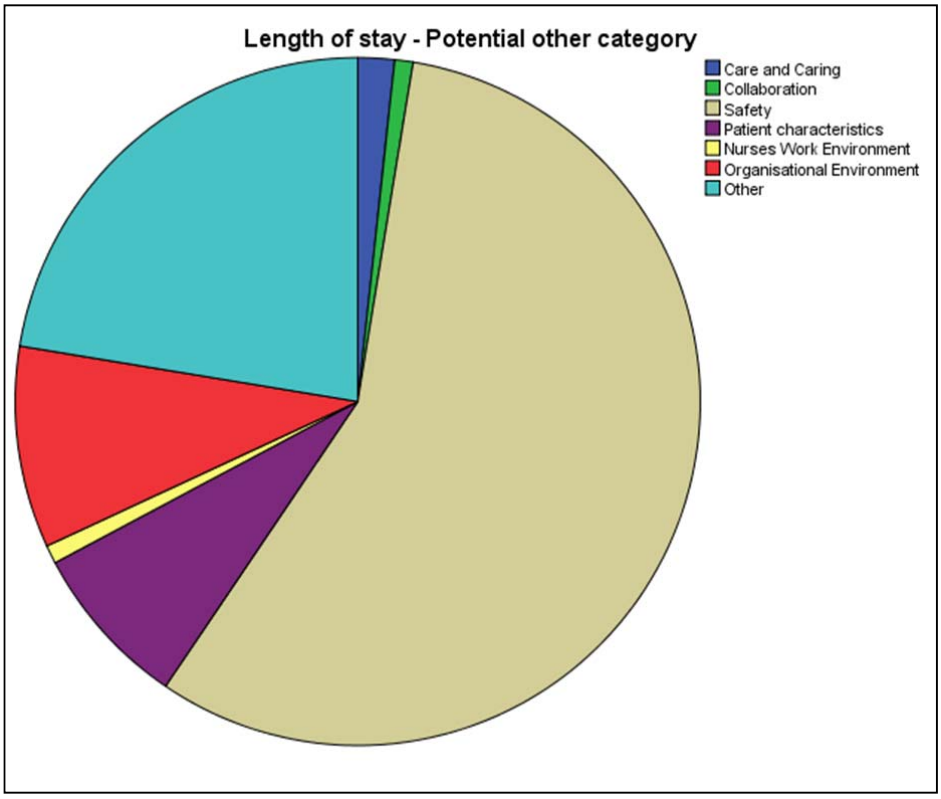

Figure 5.9: Analysis of potential categories for 'Length of stay'

As with previous categories, participants were also asked to provide qualitative data about whether the heading of Safety adequately summarised and encapsulated the concepts presented within it. Thirty-six participants responded to this question and all responses indicated that the heading was appropriate. Two other suggestions were made for alternative names of the category. They were: clinical quality and safety; and patient safety. Following review of these alternatives, it was decided to leave the heading as Safety.

5.8.3.2.5 Patient Characteristics

In keeping with previous categories, participants were asked to indicate within the survey whether each of the individual concepts within the category of Patient Characteristics could reasonably be categorised under that heading and grouped together. The data for the category of Patient Characteristics is presented in Table 5.15.

Table 5.15: Descriptive statistics for categorising concepts within Patient Characteristics

Concepts within Patient Characteristics	Number	Fits in category (%)	Does not fit in category (%)
Patient's willingness to participate in care	115	95.7	4.3
Pre-admission level of independence / dependence	115	94.8	5.2
Pre-admission quality of life	115	95.7	4.3
Cognitive status of patient	114	95.6	4.4
Family involvement in care	115	88.7	11.3
Patient expectations of healthcare intervention	114	93.9	6.1

All concepts within Patient Characteristics (six in total) received greater than seventy five percent of all participants agreeing that the concept could reasonably be categorised within the heading of Patient Characteristics.

As with previous categories, participants were also asked to provide qualitative data about whether the heading of Patient Characteristics adequately summarised and encapsulated the concepts presented within it. Thirty-three participants responded to this question and all responses indicated that the heading was appropriate. Three other suggestions were made for alternative names of the category. They were: patient information; client characteristics and patient status. Following discussion of these alternatives, it was decided to leave the heading as Patient Characteristics.

5.8.3.2.6 Workload

Participants were asked to indicate within the survey whether each of the individual concepts within the category of Workload could reasonably be categorised under that heading and grouped together. The data for the category of Workload is presented in Table 5.16.

Table 5.16: Descriptive statistics for categorising concepts within Workload

Concepts within Workload	Number	Fits in category (%)	Does not fit in category (%)
Patient acuity	116	96.6	3.4
Diagnosis / Diagnosis Related Group (DRG)	116	88.8	11.2
Casemix information	116	94.8	5.2
Ward / department type	116	90.5	9.5
Patient turnover	116	95.7	4.3
Caseload	116	97.4	2.6
Hours of available nursing care	116	100	0
Nurse to patient ratio	116	98.3	1.7

All concepts within Workload (eight in total) received greater than seventy five percent of all participants agreeing that the concept could reasonably be categorised within the heading of Workload.

As with previous categories, participants were also asked to provide qualitative data about whether the heading of Workload adequately summarised and encapsulated the concepts presented within it. Thirty-six participants responded to this question and all indicated that the heading was appropriate. Two other suggestions were made for alternative names of the category. They were: patient needs; and work. Following discussion of these alternatives with the research supervisors, it was decided to leave the heading as Workload.

5.8.3.2.7 Nurses Work Environment

As with previous categories, participants were asked to indicate within the survey whether each of the individual concepts within the category of Nurses Work Environment could reasonably be categorised under that heading and grouped together. The data for the category of Nurses Work Environment is presented in Table 5.17.

Table 5.17: Descriptive statistics for categorising concepts within Nurses Work Environment

Concepts within Nurses Work Environment	Number	Fits in category (%)	Does not fit in category (%)
Nurses work environment	114	100	0
Skill mix of nursing staff	115	95.7	4.3
Number of casual staff	115	90.4	9.6
Number of agency staff	115	93.9	6.1
Nursing overtime worked	115	94.8	5.2
Staff turnover (e.g. resignations and recruitment)	115	95.7	4.3
Education of nursing staff	115	95.7	4.3
Experience of nursing staff	115	95.7	4.3
Competency of staff	115	91.3	8.7
Leadership of unit	115	94.8	5.2
Well-being of nursing staff	115	91.3	8.7
Nursing culture	115	96.5	3.5
Physical fitness of nursing staff	115	83.5	16.5
Presence / availability of members of the multi-disciplinary team	115	90.4	9.6
Presence / availability of auxiliary staff in unit	113	89.4	10.6

All concepts within Nurses Work Environment (sixteen in total) received greater than seventy five percent of all participants agreeing that the concept could reasonably be categorised within the heading of Nurses Work Environment.

As with previous categories, participants were also asked to provide qualitative data about whether the heading of Nurses Work Environment adequately summarised and encapsulated the concepts presented within it. Thirty participants responded to this question and all responses indicated that the heading was appropriate. Three other suggestions were made for alternative names of the category. They were: staff characteristics; nurse characteristics and work environment; and workforce

characteristics. Following discussion of these alternatives, it was decided to leave the heading as Nurses Work Environment.

5.8.3.2.8 Organisational Characteristics

Participants were asked to indicate within the survey whether each of the individual concepts within the category of Organisational Characteristics could reasonably be categorised under that heading and grouped together. The data for the category of Organisational Characteristics is presented in Table 5.18.

All concepts within Organisational Characteristics (nine in total) received greater than seventy five percent of all participants agreeing that the concept could reasonably be categorised within the heading of Organisational Characteristics.

Participants were also asked to provide qualitative data about whether the heading of Organisational Characteristics adequately summarised and encapsulated the concepts presented within it. Thirty-one participants responded to this question and all responses indicated that the heading was appropriate. No other suggestions were made about alternative category names.

Table 5.18: Descriptive statistics for categorising concepts within Organisational Characteristics

Concepts within Collaboration	Number	Fits in category (%)	Does not fit in category (%)
Type of organisation	115	98.3	1.7
Management support	115	100	0
Management experience and qualifications	115	98.3	1.7
Presence / availability of after-hours education and support	115	98.3	1.7
Model of care in use	114	93	7
Organisational commitment to providing best practice	115	99.1	0.9
Organisational culture	115	98.3	1.7
Organisational commitment to providing person centred care	115	99.1	0.9
Utilisation of evidence based practice within organisation	115	96.5	3.5

5.8.4 Summary from the modified Delphi survey

At the completion of three rounds of the modified Delphi survey, 103 concepts had been recognised by participants as important in measuring nursing practice. These 103 concepts were thematically organised into eight categories which encompass:

- Care and Caring
- Communication
- Coordination and Collaboration
- Safety
- Patient Characteristics
- Workload
- Nurses Work Environment
- Organisational Characteristics

This process enabled the researcher to further refine the conceptual framework for measuring the quality and safety outcomes of nursing work as presented in Chapter 4.

The ongoing development of this conceptual framework is explored in the following section.

5.9 Ongoing development of the conceptual framework for measuring the quality and safety outcomes of nursing practice

At the completion of Phase 2 of this multi-phase, mixed methods research project, the conceptual framework for measuring the quality and safety outcomes of nursing practice was refined from what was presented in section 4.10.1 in the previous chapter. At this time the conceptual categories were applied to the existing framework.

The categories of Patient Characteristics, Workload and Organisational Characteristics were recognised as predominately Structural measures. Nurses Work Environment contained some structural measures as well, but it also contained some concepts that measured processes of care. Care and Caring, Communication, Coordination and Collaboration, and Safety were all recognised as containing process measures and outcome measures.

A visual representation of the modified conceptual framework for measuring the quality and safety outcomes of nursing practice was developed and is presented in Figure 5.10.

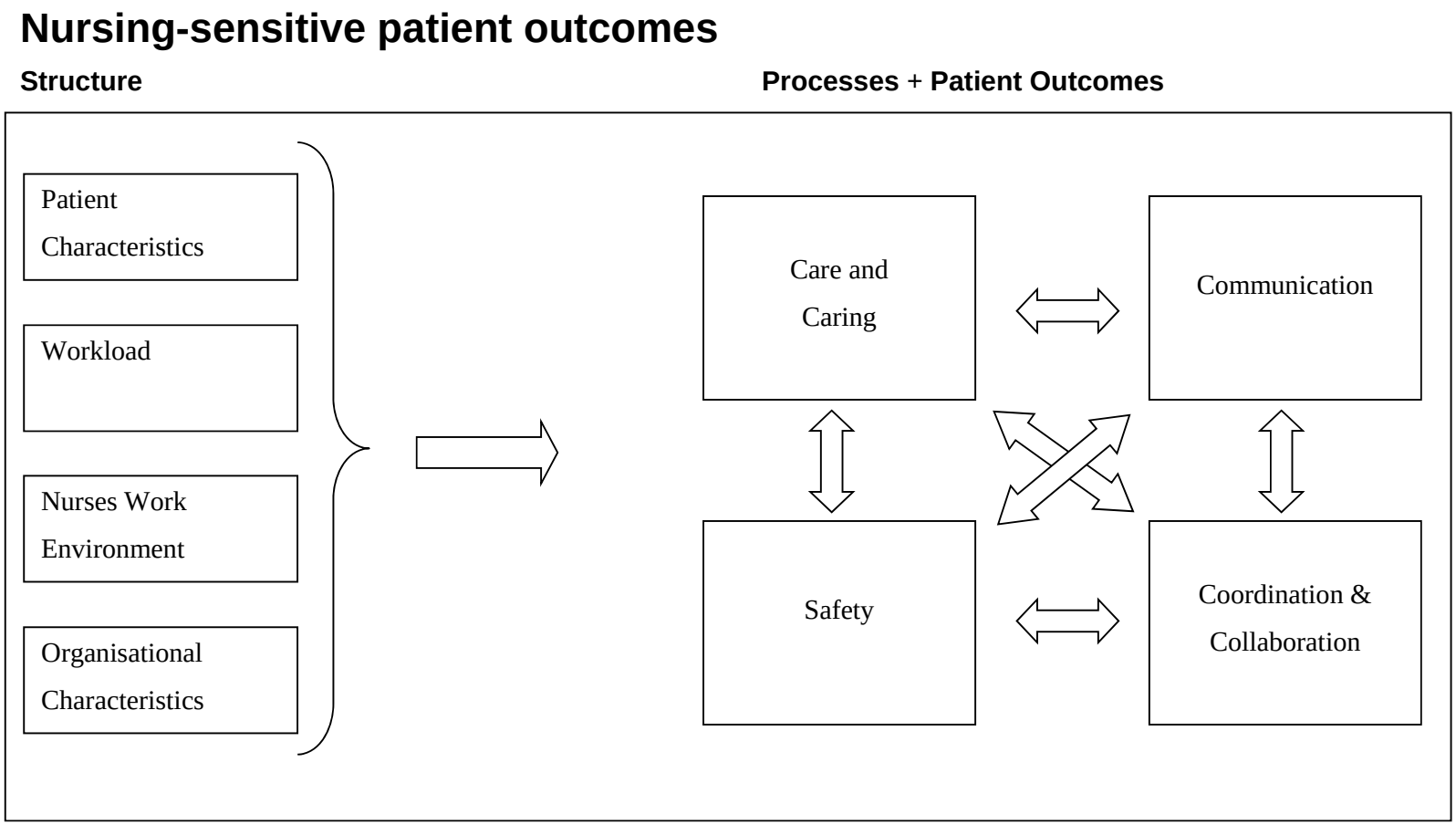

Figure 5.10: A revised conceptual framework for measuring the quality and safety outcomes of nursing practice following completion of data collection and analysis in Phase 2 of the research project

5.10 Procedures used to ensure rigour within Phase 2 of the research

In this phase of the research both quantitative and qualitative data were collected and analysed using a modified Delphi survey. Due to the design of this component of the research it is not appropriate to only present information about the *validity and reliability* of the research process as these terms are not accepted by the majority of qualitative researchers (Morse & Richards 2002). Nor is it appropriate to only discuss the *credibility, dependability, confirmability and transferability* of the research process (Lincoln & Guba 1985) because these terms are not generally accepted by quantitative researchers. To ensure a comprehensive discussion of the methodological rigour of this project, a discussion of the procedures used in both the quantitative components and the qualitative components of the study will be undertaken. This discussion uses the framework described in section 3.6 and begins with a discussion of quantitative data and the concept of validity.

5.10.1 Quantitative data and the concept of validity

The collection and analysis of quantitative data within the modified Delphi survey incorporated a number of specific approaches to enhance validity and reliability. These approaches are now explored under the headings of internal validity, external validity and reliability.

5.10.1.1 Internal validity

Internal validity refers to the confidence we have in the accuracy of the results of a study (Keeney, Hasson & McKenna 2011). It is usually discussed in terms of content validity, criterion-related validity and construct validity. Within a Delphi study a number of specific procedures are also recommended to counteract threats to validity that have been identified in the method (Keeney, Hasson & McKenna 2011).

Content validity was enhanced within the research process through use of a rigorous and comprehensive process to develop the Round 1 survey. The use of qualitative procedures to develop the Round 1 survey enabled a broad and comprehensive collection of concepts for participants to consider. In addition, providing opportunities

for participants to add new categories and provide comments on existing categories within the modified Delphi survey ensured that the concepts presented were reviewed and judged by participants to obtain consensus agreement. The collective opinions of a large group of nurses enhanced the content validity of the survey and the process.

Criterion related validity was enhanced through use of pilot testing of the Round 1 survey. Pilot testing has been advocated as a strategy to enhance criterion-related validity by a number of authors (Keeney, Hasson & McKenna 2001; Clibbens, Walters & Baird 2012).

Construct validity was enhanced through using participants to categorise concepts as part of the modified Delphi survey. This process occurred in the Round 3 survey. A factor analysis of items from the Round 1 and round 2 surveys was also completed but did not meet the statistical requirements to ensure accuracy in collation of the factors.

The modified Delphi survey used a set of procedures to ensure important decisions about the research process were incorporated into the research design. The procedures to enhance validity aimed to overcome some of the potential weaknesses reported within the Delphi survey technique and ensure rigour within this research project. The procedures were developed based upon recommendations from experts on the Delphi survey technique (Keeney, Hasson & McKenna 2006; Keeney, Hasson & McKenna 2011). The procedures were:

- Determining a pre-determined level of consensus agreement prior to commencing data collection (this was set as 75% agreement of participants ranking an item as either Very Important or Important on a 5 point Likert scale).
- Using descriptive statistics to analyse findings (frequency, percentage agreement, mean and standard deviation).
- Developing procedures for recruitment of participants (sampling frame developed and recruitment across all facilities within the targeted public and private healthcare systems carried out).

- Providing participants with feedback on group responses across all rounds of the modified Delphi survey (quantitative and qualitative feedback provided in each round).

5.10.1.2 External validity

External validity is concerned with the applicability of the results in other settings or with other subjects (Zohrabi 2013). In this research no claims are made that these results could be replicated. However, the new knowledge generated is being used to develop a conceptual model and approach to measuring the outcomes of nursing practice. Murphy et al. (1998) outline that the Delphi technique should not be viewed as a scientific method for creating new knowledge but rather as a scientific process for making the most of available information, which may include scientific data or the collective wisdom of participants. In this modified Delphi survey, the collective wisdom of a large number of practicing nurses was collected and collated to build knowledge and understanding of the important concepts in measuring the outcomes of nursing practice.

5.10.1.3 Reliability

Reliability refers to an examination of the stability and equivalence of the research conditions and procedures (Keeney, Hasson & McKenna 2011). The Delphi approach is said to enhance reliability in two main ways. Firstly, this relates to the design of the interaction. Because participants do not need to meet, group think scenarios are avoided and individual participants are able to contribute on their own terms without being influenced by others (Keeney, Hasson & McKenna 2011). Secondly, as the panel size increases, the reliability of the data from the respondent group also increases (Keeney, Hasson & McKenna 2011). In addition to this, the overall response rate of participants from round to round can also be an indicator of reliability.

In this research a large number of candidates were targeted to participate in the research project. Once the first round of the modified Delphi survey had been completed, the opportunity for new candidates to participate was removed. Consistency of participants in each iterative round was required so that knowledge construction throughout the

project was a linear one with all participants and the researcher building this knowledge in each subsequent round of the project. A marker of success for this approach can be seen in the analysis of participant drop-out rates during the project. A total of 196 participants completed the Round 1 survey and were subsequently invited to participate in the Round 2 survey. A total of 169 participants completed the Round 2 survey and this equated to a response rate of 86% of available participants. All these participants were invited to complete the Round 3 survey. A total of 128 participants completed the Round 3 survey and this equates to a response rate of 76% of available participants. The total participant drop-out rate from Round 1 to Round 3 was 35% which is seen to be acceptable when compared to other Delphi surveys that used such a large sample size (Butler et al. 2009; Fullerton, Thompson & Severino 2011; Schneider & Dutton 2002).

The procedures for ensuring rigour in the collection and analysis of qualitative data is now explored.

5.10.2 Qualitative data and the concept of trustworthiness

The concept of trustworthiness was used to ensure rigour within this phase of the research project (Lincoln & Guba 1985). To ensure rigour within the research process, the concepts of credibility, dependability, confirmability and transferability were considered (Lincoln & Guba 1985). The following discussion explains how this research addressed these concepts using the framework described in section 3.6.2.

5.10.2.1 Credibility

Strategies to ensure credibility were built into this research during the research design, data collection, data analysis and during interpretation of the findings. Table 5.19 has been used to present how the six specific processes for assuring credibility (as identified by Lincoln and Guba 1986) were incorporated into this project.

Table 5.19: Processes for assuring credibility in Phase 2 of this research project

Processes for assuring credibility (Lincoln & Guba 1985; Lincoln & Guba 1986)	In this research ….
Prolonged engagement	This phase of the research involved surveying the same group of participants three times. Participants were aware of this commitment at the commencement of the project. As a result of this commitment the qualitative data became richer and more informed about the topic throughout the research process. It is hoped that trust was developed and maintained and the quality of the data provided by participants enhanced by their prolonged involvement in the project.
Persistent observation	Persistent observation of the topic was undertaken through 3 rounds of the modified Delphi survey. This enabled context to be understood and the most important factors involved in measuring nursing care to be identified.
Triangulation	Both quantitative and qualitative data was obtained in this phase of the research. Method triangulation was used to develop a richer and more complete understanding of the concepts being measured and constructing knowledge on the topic. In addition, the research supervisors were used to cross-check data accuracy, coding and interpretation of findings.
Peer debriefing	As part of research supervision peer debriefing was used to discuss decisions and actions about design, data collection and analysis and interpretations of findings. In addition, presentation of initial and interim progress reports and presentations at conferences were used to gain feedback on research design, data collection, data analysis and interpretation of findings.
Negative case-analysis	Alternative or disconfirming views were identified, analysed and interpreted as part of data analysis. All concepts identified by participants were presented for review. No concepts were filtered unless the concept suggested by participants was already included within the Round 1 survey. All other concepts were presented to participants for review.
Member checking	The iterative nature of the modified Delphi survey lends itself to the use of member checking. Qualitative data provided in Round 1 of the survey was analysed and presented to participants in Round 2. Participants were asked to provide feedback on whether it represented the concepts that they had put forward. The Round 3 survey also asked participants for feedback on the process of conceptually grouping concepts.

5.10.2.2 Dependability

Dependability requires the researcher to provide enough details about the procedures used in the study that it could be replicated by another researcher (Lincoln & Guba 1985). The description of the research process within this thesis provides evidence to comply with this requirement.

In addition, this research has used audit trials to describe and justify decisions made in planning the research, recruiting the participants, undertaking the research and in analysing data from each of the three rounds of the modified Delphi survey. These decision trails have been described in the thesis and aim to ensure that the researcher is overt in describing decisions and reflexive in their role as researcher. The research supervision process has supported these decision trails throughout the project.

5.10.2.3 Confirmability

Confirmability relates to the ability of the researcher to objectively identify findings from the experiences and ideas of participants (Lincoln & Guba 1985; Shenton 2004). This includes a description of the researcher's ontological, epistemological and methodological beliefs and the use of reflexivity in discussing the research and their role within it. Section 3.2 provides an overview of the researcher's world view and reflective commentary has been used in presenting the findings of the research.

5.10.2.4 Transferability

Transferability involves the use of *thick description* so that the reader can assess the transferability of new knowledge from the research (Lincoln & Guba 1985). In writing up the findings of this research, thick and contextualised description has been used to illustrate feedback from participants during different rounds of the modified Delphi survey.

5.11 Summary

Phase 2 of this research project has expanded upon the findings from Phase 1 of the project. It has identified a list of the most important concepts for measuring the outcomes of nursing practice using a modified Delphi survey and grouped these concepts conceptually into eight categories. As a consequence of data collection and analysis, knowledge about what practicing nurses consider to be the important concepts for measuring nursing practice has been constructed. This has enabled a conceptual framework for measuring the quality and safety outcomes of nursing practice to be further refined. The next phase of this research involved identification of the indicators and measurement methods for measuring these important concepts with the aim of identifying a set of indicators for measuring the quality and safety outcomes of nursing practice. The research design and findings of Phase 3 of this research are presented in the next chapter.

CHAPTER 6: PHASE 3 - RESEARCH DESIGN AND FINDINGS

6.1 Introduction

This chapter presents and explains the methods and the findings from Phase 3 of this multi-phase, mixed methods research study. This phase of the research addressed the following research questions:

- what indicators (and measurement methods) are the most effective for measuring nursing practice?
- what set of indicators would be the most effective for measuring the quality and safety of nursing practice in a holistic and comprehensive way?

This chapter builds upon the findings from previous phases within this research project and begins with a description of the research approach, the methodology and the specific research methods used in this phase of the research project. The ethical considerations relevant to the research are then outlined. This phase of the research project used a template analysis to gather data from the existing published literature on nursing-sensitive outcomes. The data collection and data analysis procedures and the findings for the template analysis are described within the chapter. At the end of the chapter a final conceptual framework for measuring the quality and safety outcomes of nursing care is presented. An indicator set for measuring the quality and safety outcomes of nursing care is also presented. The chapter concludes with a presentation of the procedures used to ensure rigour within this phase of the research.

6.2 Research approach and methodology

Phase 3 of this research project, used a qualitative approach for gathering data to identify the indicators and measurement methods that have been used to measure nursing practice. This qualitative data was then collated and transformed into quantitative data by counting the presence of concepts and themes. The quantitative data was then analysed to identify the most effective indicators and measurement methods

for measuring nursing practice. From the analysis of this data a set of indicators for measuring the quality and safety of nursing practice has been proposed.

Knowledge gained within Phase 2 of the project was used as the starting point for this phase of the research.

6.3 Methods

Phase 3 of this project used a template analysis to examine the published literature on the quality and safety of nursing practice. A template analysis is a qualitative technique that "does not describe a single, clearly delineated method, rather it refers to a varied but related group of techniques for thematically organising and analysing textual data" (King 2004, p. 256). A template analysis can be used to examine any form of textual data. Most frequently this will involve interview data (McKillop, Crisp & Walsh 2012; McDowell & Saunders 2010; McCluskey et al. 2011) but it can also be applied to published text as was seen in a study conducted by Andriotis (2010). In this research the textual data came from the published literature on measuring nursing practice.

The broad objective of this phase of the research project was to analyse the published literature to identify the most effective indicators and measurement methods for measuring nursing practice. Qualitative data was collected from the published literature. It was then collated and transformed into quantitative data to enable assessment of the most effective indicators and measurement methods for measuring nursing practice. Descriptive statistics (in the form of frequencies of concepts) and inference were used to identify the most effective indicators and measurement methods for measuring nursing practice. A summary of the study design for this phase of the project is presented in Figure 6.1. This diagram illustrates the steps involved in the template analysis. A description of the procedures involved in data collection, data analysis and interpretation of findings is presented later in the chapter.

Literature search conducted and
eligible studies identified

↓

Phase 2 results used to develop
a priori coding template

↓

Textual data from literature coded using *a priori* coding template

↓

Measurement methods for all coded data identified

↓

Descriptive statistics used to identify concepts
being measured within published literature

↓

Mapping of concepts and measurement methods
to conceptual framework (Phase 2)

↓

Evaluation of indicators and measurement
methods to identify an indicator set for measuring
the quality and safety of nursing practice

Figure 6.1: Phase 3 study design

A template analysis involves the thematic organisation and analysis of qualitative data according to one of three approaches (King 2004; McKillop, Crisp & Walsh 2012). The first approach is to use pre-determined codes based on a theory or framework; the second is to develop codes after an initial analysis of the data; and the third, is to start out with *a priori* codes that are refined and expanded during data analysis (King 2004; McKillop, Crisp & Walsh 2012). This research used the first approach where a hierarchical coding structure was created from the findings of Phase 2 of this project (described in Chapter 5). The hierarchical coding structure took the form of the eight categories and 103 concepts that were identified in Phase 2 from which the conceptual framework for measuring the quality and safety outcomes of nursing practice had been developed.

A template analysis was chosen as the method of data collection within this phase of the research for a number of reasons. The primary reason was that the technique enables separation of data collection from data analysis (Crabtree & Miller 1999). This separation was seen as beneficial in this project due to the quantification of the qualitative data collected in the template analysis. The blending of qualitative and quantitative data analysis was therefore avoided during this process and this ensured that there was clarity in the methodological approach used to manage data analysis.

The second reason for choosing template analysis was that the technique provides a structured approach to managing large volumes of data by enabling the researcher to focus on certain parts of the textual data to obtain the required information (Crabtree & Miller 1999; King 2004). This ability to manage large volumes of data was imperative due to the large volume of literature published on the topic being examined and the breadth of concepts identified in Phase 2 of the project.

The final reason for choosing a template analysis was that it facilitated the exploration of the many and varied ways in which concepts related to nursing-sensitive outcomes could be measured. The technique also enabled the researcher to focus this phase of data collection and analysis on the concepts recognised as important by the modified Delphi survey participants in an attempt to continue to construct knowledge on this topic.

The use of a template analysis to collect data from the published literature facilitated the identification of indicators and methodologies that have been used to examine the concepts identified as important in Phase 2 of this research. Indicators and measurement methods that were present in the literature but not identified in Phase 2 were also coded and collected within an *other* category. The collection of *other* concepts was conducted to ensure that the process was reflexive to the data from the literature. This enabled analysis of the comprehensiveness of the concepts identified in Phase 2 and facilitated assessment of any gaps or omissions within the conceptual framework as it was currently stated. An audit trail was used to record decision making during data collection and analysis as recommended by King (2004).

6.4 Search Strategy

As previously stated, the broad objective of this phase of the research project was to analyse the published literature to identify the most effective indicators and measurement methods for measuring nursing practice. Given that 12 months had passed since the literature review at the commencement of the project an updated literature search was completed. The inclusion and exclusion criteria and the precise search methods is explored in the following section.

6.4.1 Criteria for inclusion

The inclusion criteria were published studies that examined the following:

- patients / clients / healthcare consumers as the subject or participants within the research;
- nursing care as the intervention being examined (this included studies that encompassed nursing knowledge, skills and actions); and
- patient outcomes as the outcome measure being examined.

Only published studies were included. Consideration was also given to the type of study. No restrictions to study design were applied so long as the article used primary or secondary research methods to examine the role of nurses and nursing care on patient outcomes.

6.4.2 Criteria for exclusion:

Studies documenting outcomes for anyone other than patients (for example nurse outcomes), reporting different types of interventions (for example ward or hospital layout / physical design), and studies that did not report sufficient detail to be assessed were all excluded from the template analysis. In addition only studies published in peer reviewed journals and written in the English language were retrieved.

6.4.3 Search methods

A search of the electronic databases Medline, CINAHL and PROQUEST Central was undertaken in July 2011 and then updated on 31 July 2012. No limits to date of publication were applied.

6.4.3.1 Medline

The following search strategy was adopted: “nurs* sensitive outcome*”; “nurs* outcome*”; [“patient outcome*” AND “nurs*” AND (“quality” OR “evaluation” OR “measurement” OR “research”)]. This search was updated on 31 July 2012 and the following search terms were used: “nurs* sensitive outcome*”, “nurs* sensitive indicator*”, (“patient outcomes” AND “nurs*”, AND “research”). Limits were applied to peer reviewed journals and only English language articles were retrieved.

6.4.3.2 CINAHL

The following search strategy was adopted: “nurs* sensitive outcome*”; “nurs* outcome*”; [“patient outcome*” AND “nurs*” AND (“quality” OR “evaluation” OR “measurement” OR “research”)]. This search was updated on 31 July 2012 and the following search terms were used: “nurs* sensitive outcome*”, “nurs* sensitive indicator*”, (“patient outcomes” AND “nurs*”, AND “research”). Limits were applied to peer reviewed journals and only English language articles were retrieved.

6.4.3.3 PROQUEST CENTRAL

The following search strategy was adopted: “nurs* sensitive outcome*”; “nurs* outcome*”; [“patient outcome*” AND “nurs*” AND (“quality” OR “evaluation” OR “measurement” OR “research”)]. This search was updated on 31 July 2012 and the following search terms were used: “nurs* sensitive outcome*”, “nurs* sensitive indicator*”, (“patient outcomes” AND “nurs*”, AND “research”). Limits were applied to peer reviewed journals and only English language articles were retrieved.

6.4.3.4 Bibliographies

The reference lists of all included studies were also reviewed by the researcher to identify any additional studies that were not found within the database searches. These articles were then accessed and read in full to determine if they met the inclusion and exclusion criteria.

6.4.4 Eligible studies

As a result of completing this search strategy, 3743 articles were identified from the electronic databases. The abstracts for each of these articles were read and all duplicates were removed. Articles which appeared to meet the inclusion and exclusion criteria were downloaded and read in full. This resulted in 644 articles being included in the data collection procedure for the template analysis. A total of 168 of these were sourced from the bibliographies of articles which met the inclusion and exclusion criteria.

All of the 644 articles included in the data collection were read in full. Of these, 244 articles were included in the data collection for the template analysis. Articles were excluded at this stage if they did not use primary or secondary research methods and if they did not relate to the measurement of patient outcomes. Figure 6.2 outlines the outcomes of the literature search.

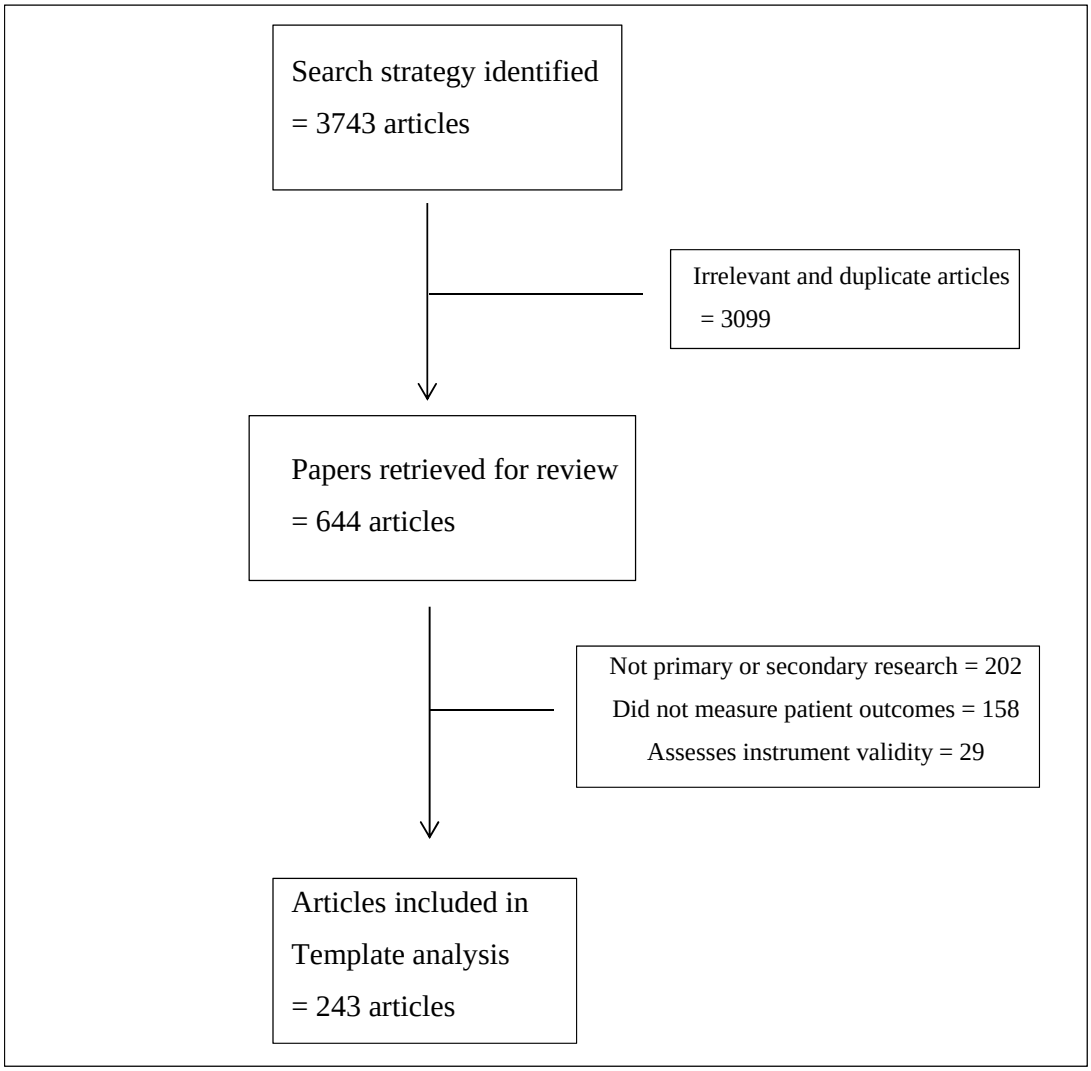

Figure 6.2: Outcomes of literature search within the template analysis

6.5 Data collection procedures

A set of procedures was developed to manage data collection for the template analysis. This included identifying and managing source documents, development of the *a priori* coding template, coding of each article, and collation of coded data. The purpose of data collection in this phase of the research was to identify the concepts being measured in all eligible studies and enable meaningful coding of these concepts for analysis after data collection had been completed. These procedures are described in the following section.

6.5.1 Identifying and managing source documents

Data collection began with the development of data management procedures following the identification of all eligible studies. This involved importing the citations and the full-text PDF file for each paper retrieved for review into EndNote. This amounted to 644 articles. EndNote was then used as an external data source within NVivo and all 644 articles were imported into NVivo as source documents. The PDF full text article and a Memo which included the full citation for each article became source documents within NVivo.

6.5.2 Development of the *a priori* coding template

The *a priori* coding template was developed from the findings of Phase 2 of this research project (previously described in Chapter 5). This meant that the eight categories and 103 concepts identified within Phase 2 were used as a hierarchical coding structure. The *a priori* coding template consisted of eight level-one codes: Care and Caring; Communication; Coordination and Collaboration; Safety; Patient Characteristics; Workload; Nurses Work Environment; and Organisational Characteristics. Each of these level-one codes was conceptualised as a theme and the concepts within that category were organised into level-two codes (or sub-headings) if there was a cluster of concepts that were similar. Each of the 103 individual concepts from the Phase 2 results was then identified as a level-three code.

An example of the *a priori* coding structure for the category of Communication is provided in Figure 6.3. This illustrates the level-one code of Communication, the use of level-two codes as subthemes and the level-three codes identified in Phase 2 as concepts. The coding structures for the other seven categories used an identical format.

Level-one code: Communication

1. Patient / client perceptions / satisfaction
    i. Being involved in decision making
    ii. Communication with nurses
    iii. Being informed about nursing care
    iv. Being heard

2. Family perceptions / satisfaction
    i. Perception of being involved in decision making
    ii. Satisfaction with information provided by nursing staff

3. Trust in nurses
    i. Trust in nurses

4. Documentation
    i. Comprehensive physical and mental health assessment
    ii. Nursing care in medical record
    iii. Nursing assessment in medical record

5. Cultural awareness of nursing staff
    i. Cultural awareness of nursing staff

6. Management of incidents / complaints
    i. Management of incidents / complaints

Figure 6.3: Example of *a priori* coding template for the level-one code of Communication

6.5.3 Coding of concepts

The coding of concepts was achieved by reading and re-reading all source documents and coding references to the measurement of the quality and safety of nursing care within NVivo. This process involved coding of concepts from the *a priori* template, coding of *other* concepts measured within source documents and the identification of how each concept was measured. The process of coding has been documented within Figure 6.4.

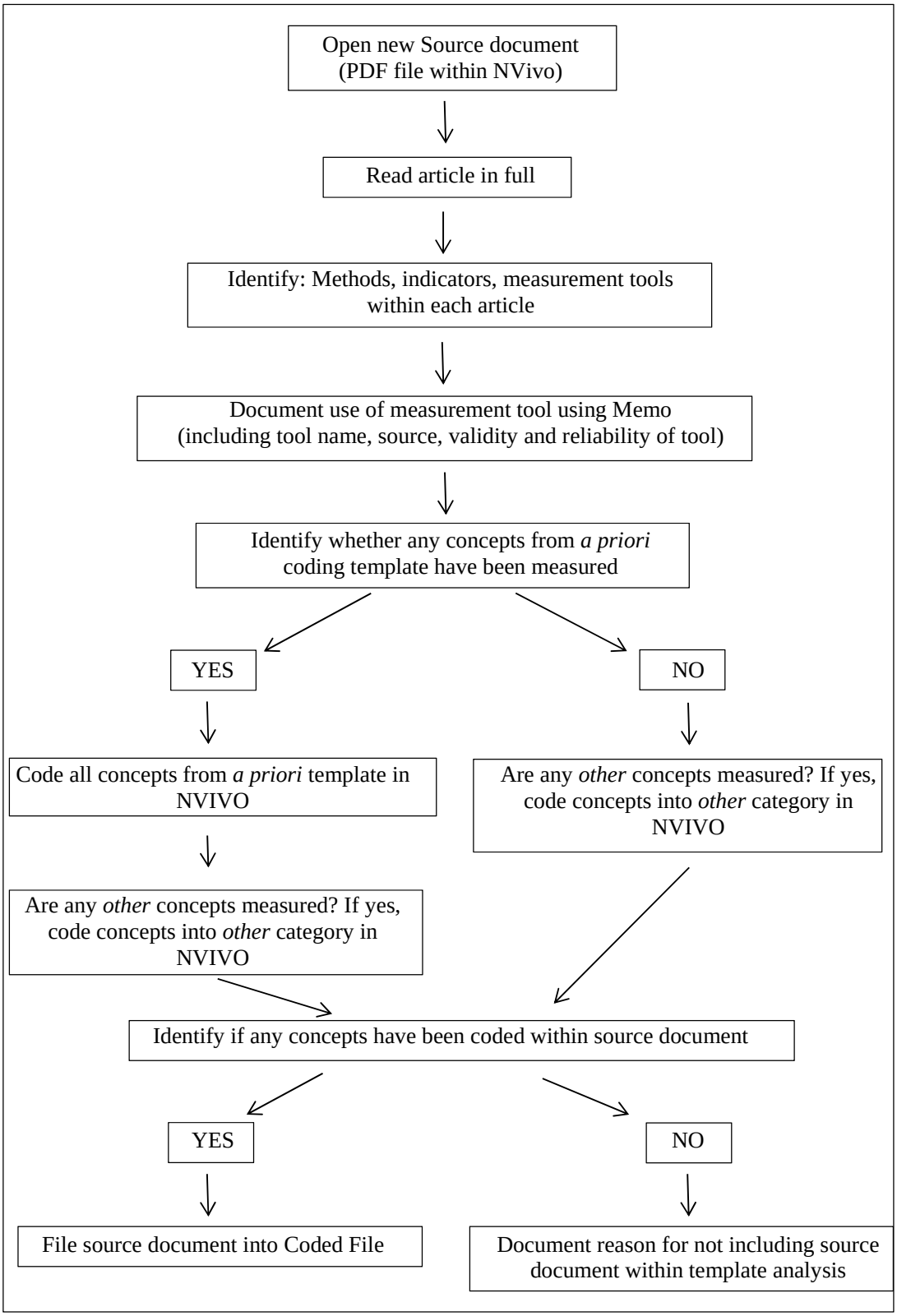

Figure 6.4: Procedure for coding source documents within the template analysis

6.5.4 Collation of coded data

Following the review of all articles included within the template analysis, coded data was collated for review. NVivo reports were produced for each level-one, level-two and level-three codes within the *a priori* coding template. Each piece of coded data was examined and the method of measurement of each of the level-three coded concepts was identified. For some level-three codes this included recording data definitions or information sources for the data. For other level-three codes it included measurement tools used by authors to examine the concept being studied. An Excel spreadsheet was then developed to document the number of times each level-three code had been coded, the source document for each code and the tool used to measure each concept.

Concepts coded within the *other* category were also collated for review. All concepts in the *other* category were coded as level-three items. They were then documented within an Excel spreadsheet so that the number of times each concept had been coded within the *other* category was recorded as well as the source document and the tool used to measure each concept. This data was used to develop descriptive statistics on each coded item within the *other* category. Similar concepts were then grouped together and given a level-two code name to reflect the overarching concept being measured. After level-three and level-two codes had been identified, NVivo was used to theme the concepts being measured within the level-two codes and each of the level-one codes within them. A level-one code name was developed to summarise the concepts being explored within each of its hierarchical codes.

6.6 Data analysis procedures

Data analysis had two distinct components and occurred after all data had been collected.

6.6.1 Analysis of data from the *a priori* coding template

Data that had been coded within the *a priori* coding template was transformed into quantitative data through the counting of concepts and analysed using descriptive statistics. Microsoft Excel and pivot tables were used to organise the coded data into categories and concepts. The frequency of coded concepts was analysed and used to

document the way nursing had been measured within the published literature. This provided what could be conceptualised as a stocktake of the nursing literature on this topic. Counts of measurement tools used to measure each concept and the ability for measurement tools to examine multiple concepts were used to identify how different measurement tools could be used to evaluate nursing practice. The most frequently used measurement tools / measure definitions were identified for each category.

The *measure evaluation criteria* endorsed by the National Quality Forum (NQF) (2013) were used to assess the following criteria related to each measure: importance to measure and report; scientific acceptability of measure properties; feasibility; usability and use; and related and competing measures, of each potential measurement tool and indicator. Consideration was also given to the extent to which an individual indicator or measurement tool measured multiple concepts within and across categories from Phase 2 of this research. A final set of indicators was then proposed based on this evaluation and the ability of the indicators to measure the concepts described within the final conceptual framework.

6.6.2 Analysis of the *other* concepts

The data that was coded into the *other* category was analysed using descriptive statistics and then thematically analysed. The data in the *other* category was collected to ensure that data analysis was reflexive to the data from the literature and to enable analysis of the comprehensiveness of the template used to collect it. The aim of the data analysis of the *other* concepts was to:

- identify the concepts being measured within the literature that were not captured as part of the conceptual framework development in Phase 2 of this research project.
- evaluate any gaps in the aforementioned conceptual framework.
- identify and evaluate any additional measurement tools or indicators not captured within the data collection and analysis of the *a priori* coding template.

The coded data from the published literature that was categorised as *other* concepts were analysed using guidelines developed by Braun and Clarke (2006) for thematic

analysis. Table 6.1 describes the process used in this research for analysing the qualitative data from the *other* concepts category.

Table 6.1: Braun and Clarke's (2006) phases of thematic analysis and how they were applied in the analysis of coded data in the *other* concepts category

Braun and Clarke (2006) 'Phases of thematic analysis'	**In this research ….**
Phase 1: Familiarising yourself with the data	▪ Coded data reviewed by source and by code. ▪ PDF source documents reviewed. ▪ NVIVO reports for each code generated. ▪ Individual codes read and re-read to develop understanding and meaning as it related to context. ▪ Coded data given a level-three code name. ▪ Data with similar or identical concepts coded under one level-three code name.
Phase 2: Generating initial codes	▪ Similar codes organised into sub-themes (Level-two codes). ▪ Level-two codes reviewed and similar sub-themes clustered together.
Phase 3: Searching for themes	▪ Level-two codes and level-three codes included within them, read and re-read to further develop understanding of concept being measured and conceptual groupings of concepts. ▪ Level-two codes reviewed to ensure good fit with each other
Phase 4: Reviewing themes	▪ All data within each level-one code reviewed to determine if concept being measured can be clustered together. ▪ Descriptive name given to themes (A theme equates to a level-one code)
Phase 5: Defining and naming themes	▪ Level-one code and all data within it reviewed to identify theme name. ▪ Concepts included within each level-one code reviewed and summarised so that an understanding of the data in each theme was developed.
Phase 6: Producing the report	▪ Narratives refined and supporting quotes confirmed. ▪ Final review of narrative completed.

6.7 Findings

The broad objective of the template analysis was to analyse the published literature to identify the most effective indicators and measurement methods for measuring nursing practice. To achieve this, the data was analysed in two distinct components. Firstly, the findings from the *a priori* coding template are presented. These findings use descriptive statistics to present the frequency of coded data, the numbers of measurement tools used to measure concepts and the ability for different measurement tools to measure multiple concepts. Secondly, the findings from the analysis of all *other* concepts that were coded within the literature are presented. Descriptive statistics are used to present the frequency of coded data within the *other* category as well as a thematic analysis of that data set.

6.7.1 Findings from the *a priori* coding template

The original *a priori* coding template consisted of eight level-one codes: Care and Caring; Communication; Coordination and Collaboration; Safety; Patient Characteristics; Workload; Nurses Work Environment; and Organisational Characteristics. During the data collection process it became apparent that the level-one codes of Workload and Nurses Work Environment contained level-three codes that were conceptually similar. Most data coded to level-three codes in these themes consisted of concepts that were coded into multiple places across the two themes. The decision was thus made during the initial phase of analysis of the findings to combine these two level-one codes into a single level-one code named Nurses Work Environment (including Workload). As a result, the findings are presented for seven level-one codes: Care and Caring; Communication; Coordination and Collaboration; Safety; Patient Characteristics; Nurses Work Environment (including Workload); and Organisational Characteristics.

The descriptive statistics examining the frequency of coded data within each of the seven categories (or level-one codes) in the *a priori* coding template are now presented. These findings build understanding about the volume of literature that examines each of the concepts presented within the *a priori* coding template. Findings across the whole data set, as well as within categories (level-one codes) are presented.

6.7.1.1 The frequency of coded concepts within the a priori *coding template*

Descriptive statistics were used to identify the most frequently coded concepts within the literature using the *a priori* coding template. Analysis of the number of concepts mapped to each of the seven level-one codes revealed the volume of literature that examined each of these categories. The level-one codes of Care and Caring, Nurses Work Environment (including Workload) and Safety had the largest volumes of codes allocated to them and collectively accounted for seventy-one percent of all coded data. A visual illustration of this data is presented in Figure 6.5. These proportions are indicative of the prominence within the published literature of measures of safety, nurse staffing and patient satisfaction (which is predominantly within the category of Care and Caring).

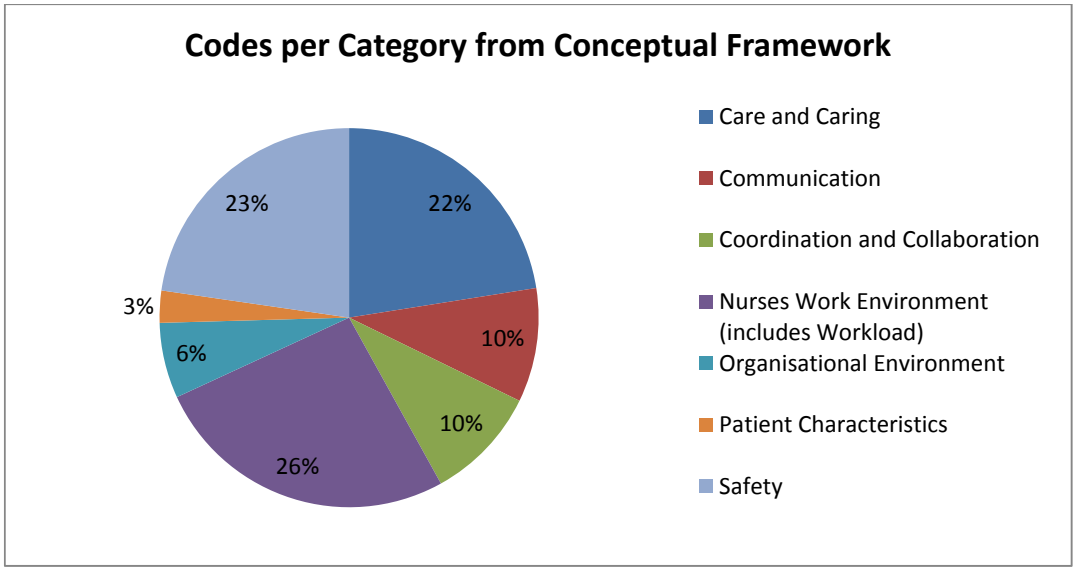

Figure 6.5: Data codes per category from Conceptual Framework (Phase 2 Findings)

The first level-one code was Care and Caring. This comprised of ten level-two codes: caring; functional status; individual focus of care; patient or client perceptions and / or satisfaction; person-centred care; quality of life; self-care; support provided to family and carers; symptom management; and understanding of disease process. Within these level-two codes were seventeen level-three codes that equate to the concepts categorised

into the heading of Care and Caring in Phase 2 of this research project (and previously described in Chapter 5).

A large volume of data was coded into the level-one code of Care and Caring. The frequency of coding of each level-three code and the number of source documents for each of these codes is presented in Figure 6.6. This graph illustrates the large volumes of coded data present for concepts related to patient perceptions and patient satisfaction with care. It also highlights that two concepts were found infrequently within the data-set. These items were: family satisfaction with involvement in care (where relevant); and patient or client support provided to family.

The second level-one code was Communication. This consisted of six level-two codes of: cultural awareness; documentation; family perceptions and satisfaction; management of incidents or complaints; patient or client perceptions and satisfaction; and trust. Within these level-two codes were thirteen level-three codes that equate to the concepts categorised into this heading in Phase 2 of this project (as described in Chapter 5). Figure 6.7 presents the frequency of each of these level-three codes and the numbers of source documents that the codes were identified within. In the category of Communication it is evident that the level-three codes related to patient perceptions and / or satisfaction with communication, decision making, and trust were the most frequently coded within the literature. Documentation processes, family satisfaction, satisfaction with cultural awareness of nurses and satisfaction with the management of incidents or complaints were only found in small numbers of source documents.

The third level-one code was Coordination and Collaboration. This level-one code consisted of four level-two codes: chronic disease management; discharge; the nursing team; and other healthcare professionals. Eleven level-three codes were present within this category. Figure 6.8 presents the frequency of each of these level-three codes and the numbers of source documents that the codes were identified within. In the category of Coordination and Collaboration the largest frequencies of coded data related to relationships within the nursing team or with other healthcare professionals. This included the level-three code of presence of collaboration between healthcare professionals which was coded forty-six times in forty different source documents.

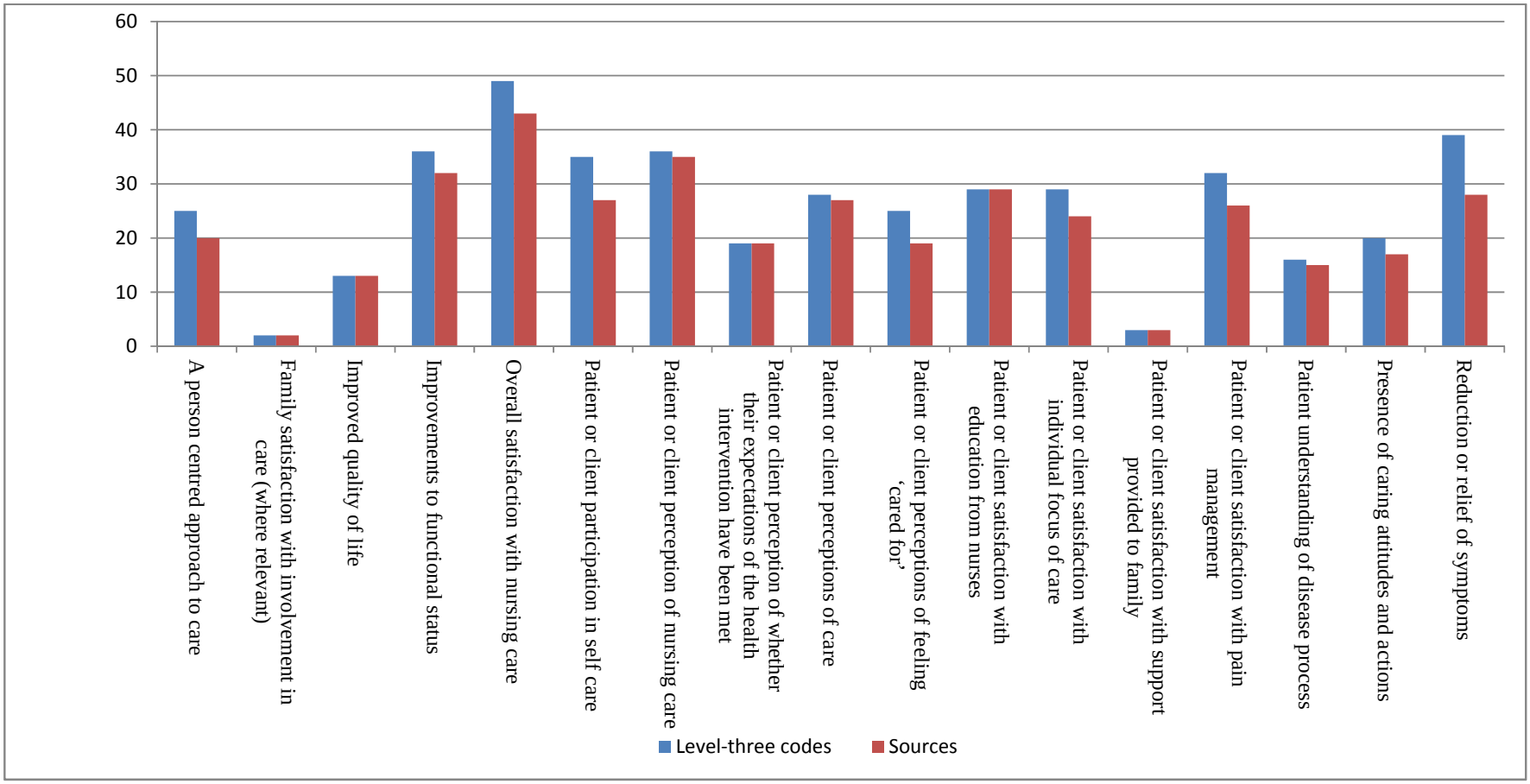

Figure 6.6: Care and Caring – The frequency of coded data for each individual level-three code and the numbers of source documents

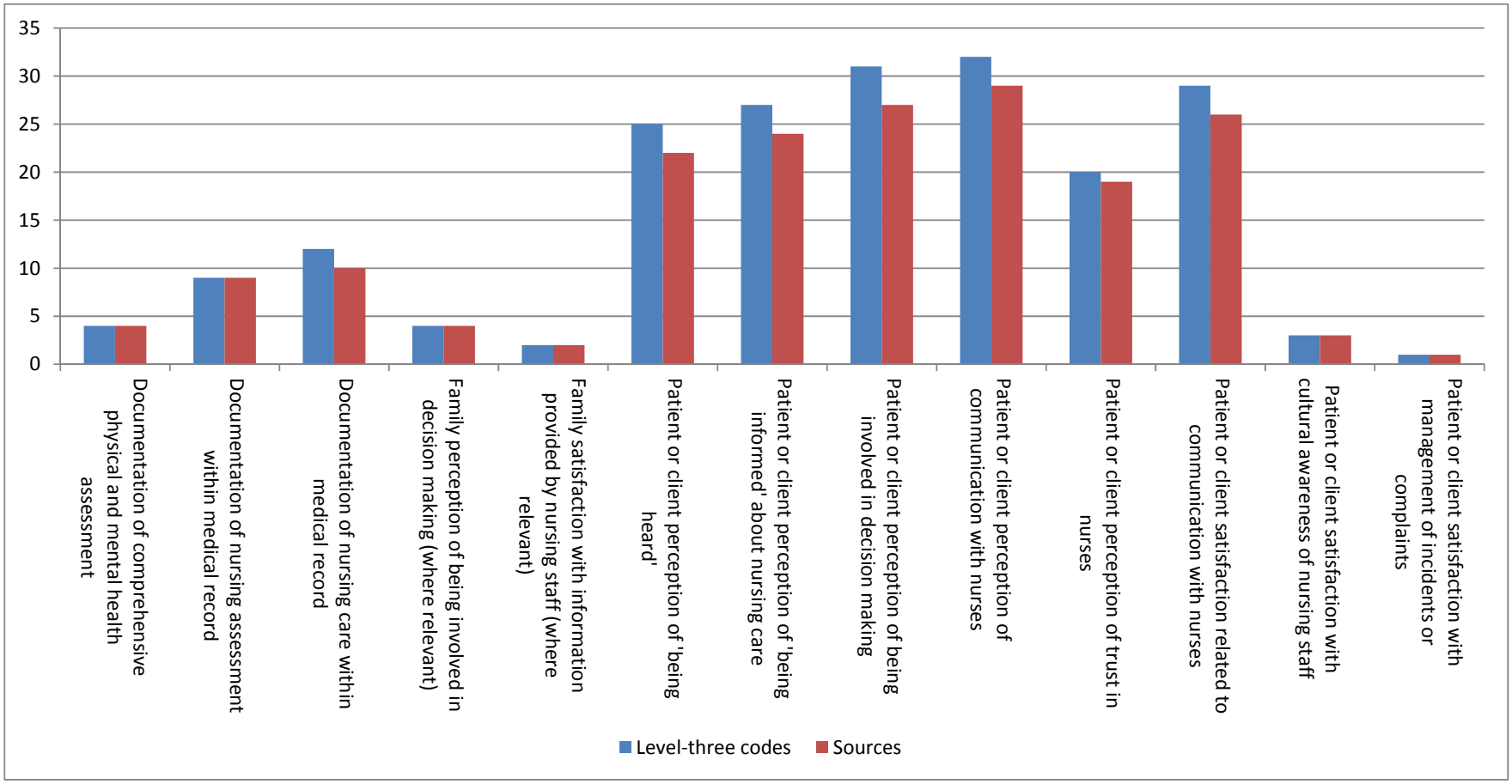

Figure 6.7: Communication – The frequency of coded data for each individual level-three code and the numbers of source documents

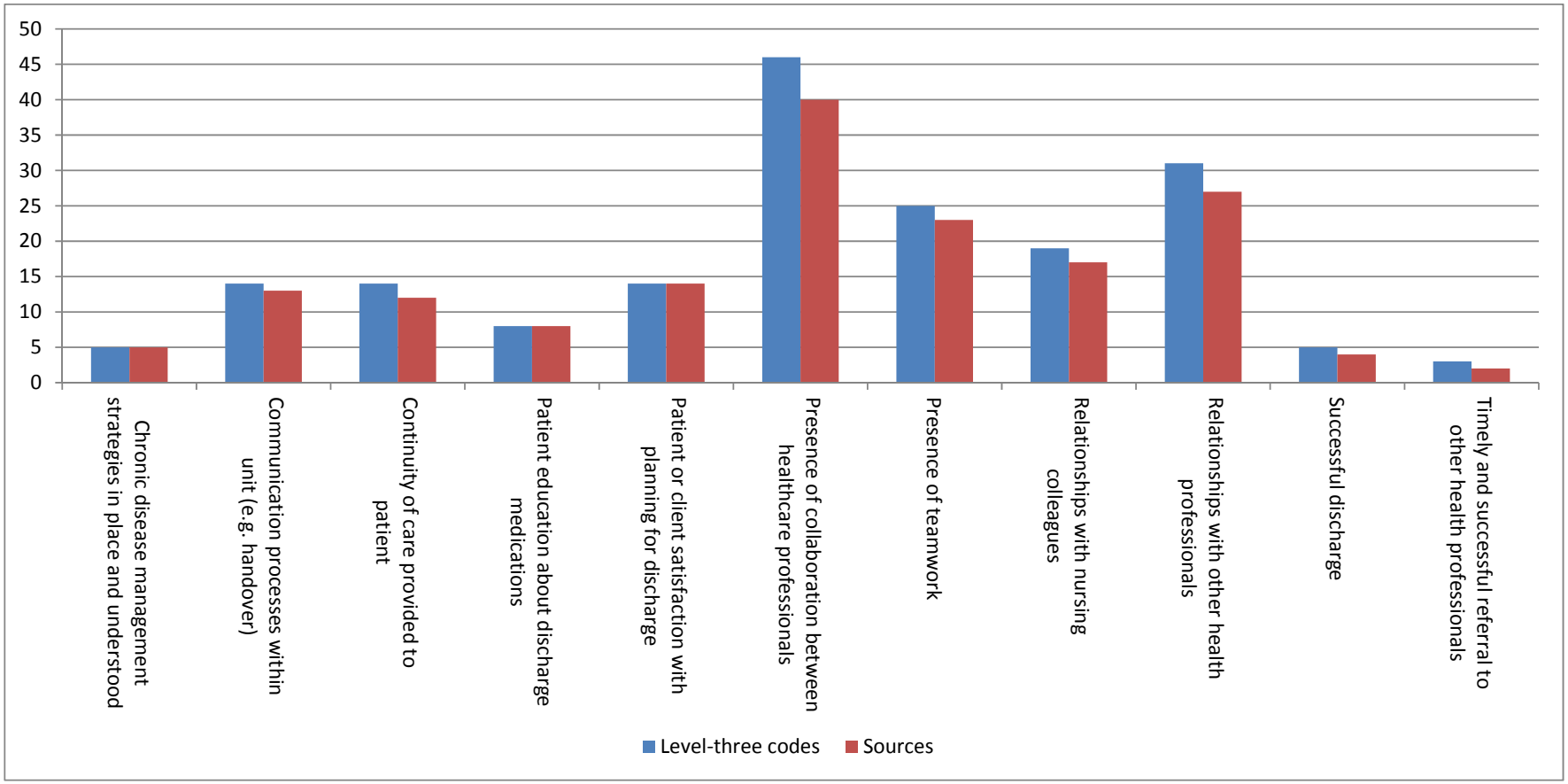

Figure 6.8: Coordination and Collaboration – The frequency of coded data for each individual level-three code and the numbers of source documents

Safety was the fourth level-one code and it consisted of nine level-two codes: delirium management; falls; hospital stay; infection control; medication administration; patient or client perceptions and satisfaction; pressure ulcers; safety culture; and self-harm. A total of twenty four level-three codes were present within this category. Figure 6.9 presents the frequencies of each of the level three codes and the numbers of source documents in which they were coded. The largest numbers of level-three codes were recorded for concepts that examined: pressure ulcers; falls; mortality; medication errors; and length of stay. There were no coded data for incidence of self-harm post admission.

The fifth level-one code was Patient Characteristics and included three level-two codes: patient expectations; patient or family involvement; and pre-admission functioning. Six level-three codes were coded within this category. Figure 6.10 presents the frequencies of each of the level three codes and the numbers of source documents in which they were coded. The largest volumes of coded data were recorded within the level-two code of pre-admission functioning and included pre-admission cognitive function, pre-admission level of dependence / independence and pre-admission quality of life. There was no coded data recorded within the level-three code of family involvement in care.

The sixth level-one code was Nurses Work Environment (including Workload). Within this category were ten level-two codes of: acuity; auxiliary resources; culture; education; experience and skills; leadership; nurse staffing; nursing environment; ward or department type; and well-being. Twenty three level-three codes were recorded within this category. Figure 6.11 presents the frequencies of each of the level three codes and the numbers of source documents in which they were coded. The most frequently coded concepts were: hours of available nursing care; skill mix of nursing staff; education of nursing staff; experience of nursing staff; nursing work environment; and nurse to patient ratio.

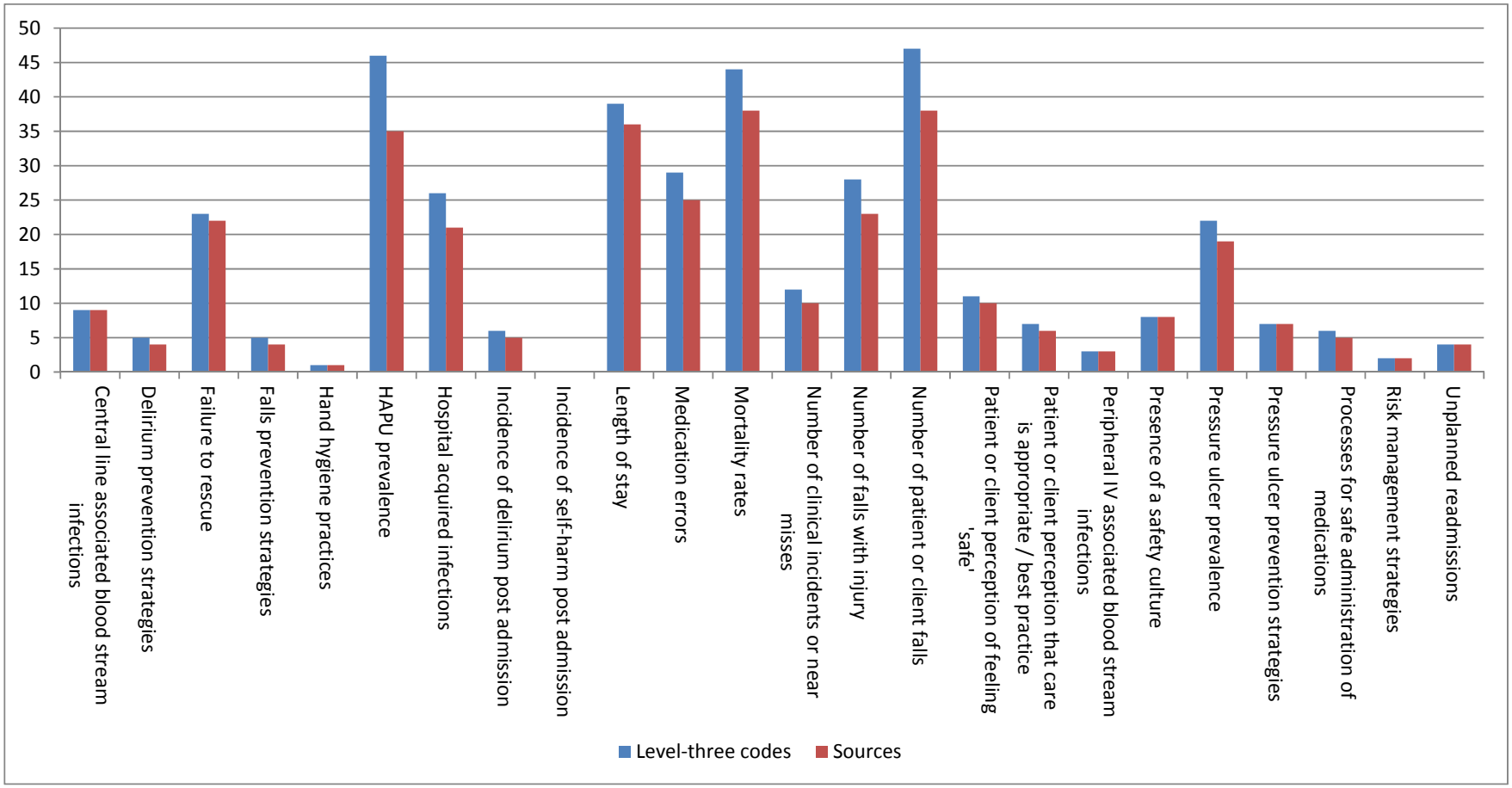

Figure 6.9: Safety - The frequency of coded data for each individual level-three code and the numbers of source documents

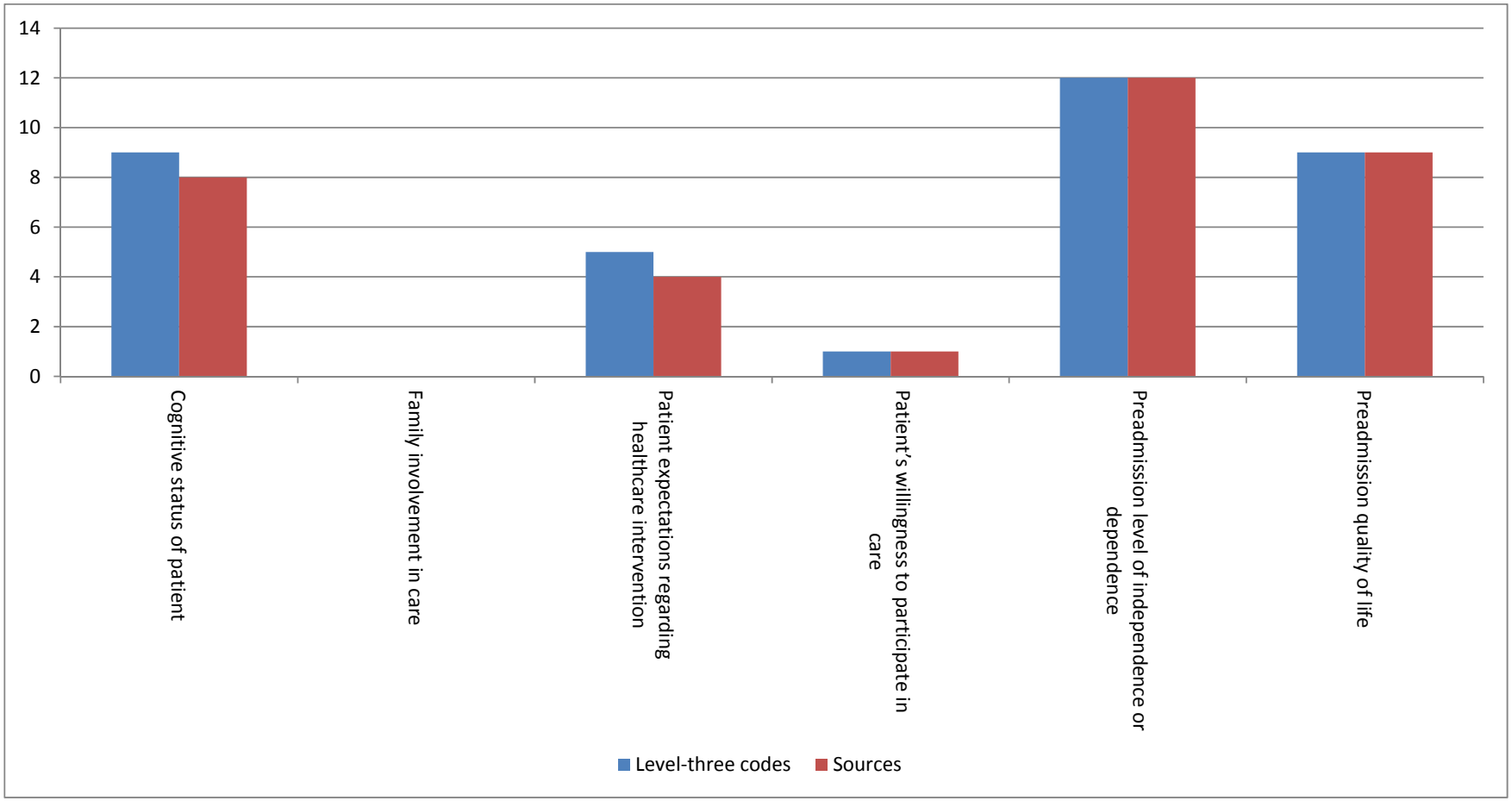

Figure 6.10: Patient Characteristics - The frequency of coded data for each individual level-three code and the numbers of source documents

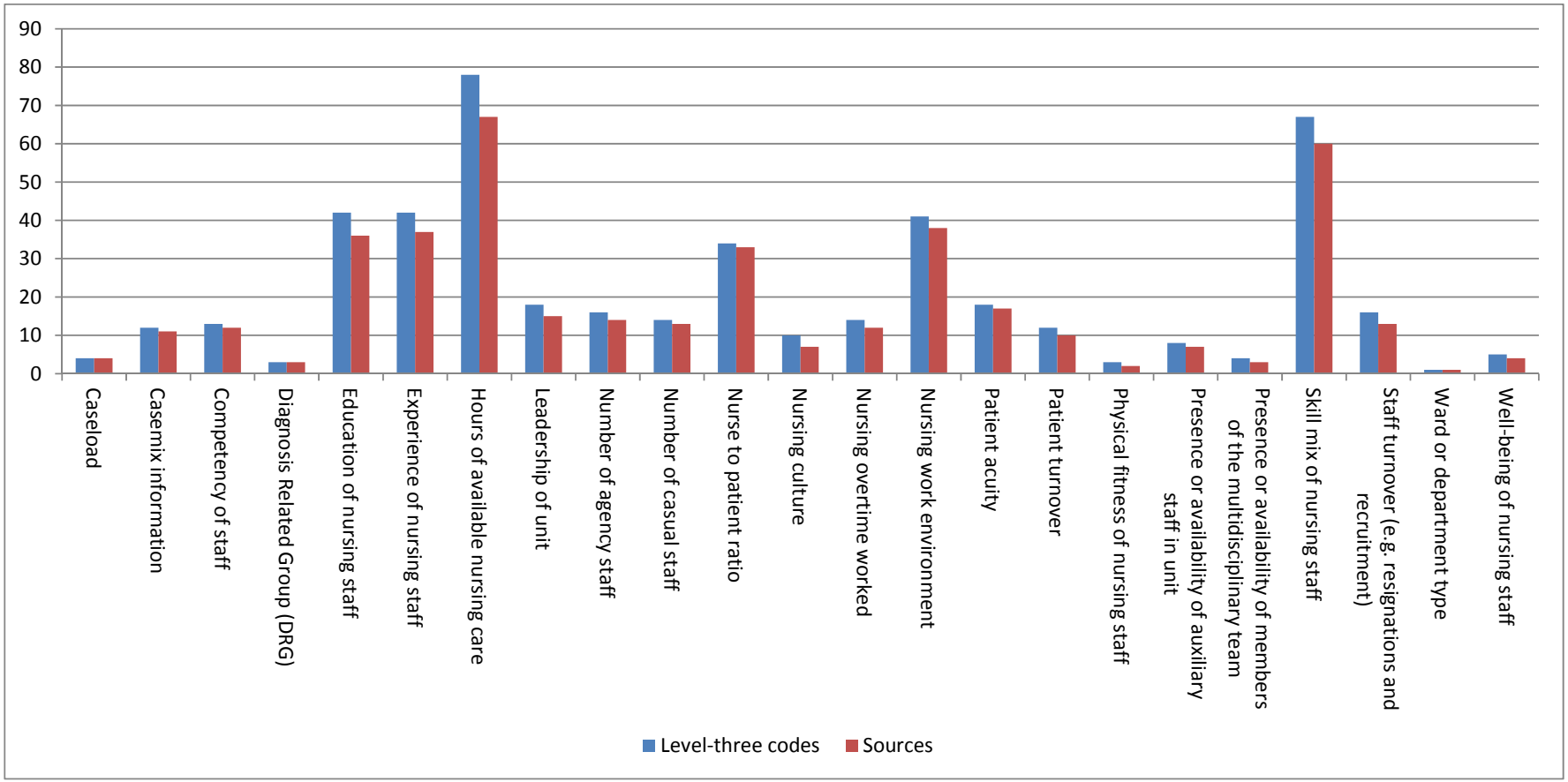

Figure 6.11: Nurses Work Environment (including Workload) - The frequency of coded data for each individual level-three code and the numbers of source documents

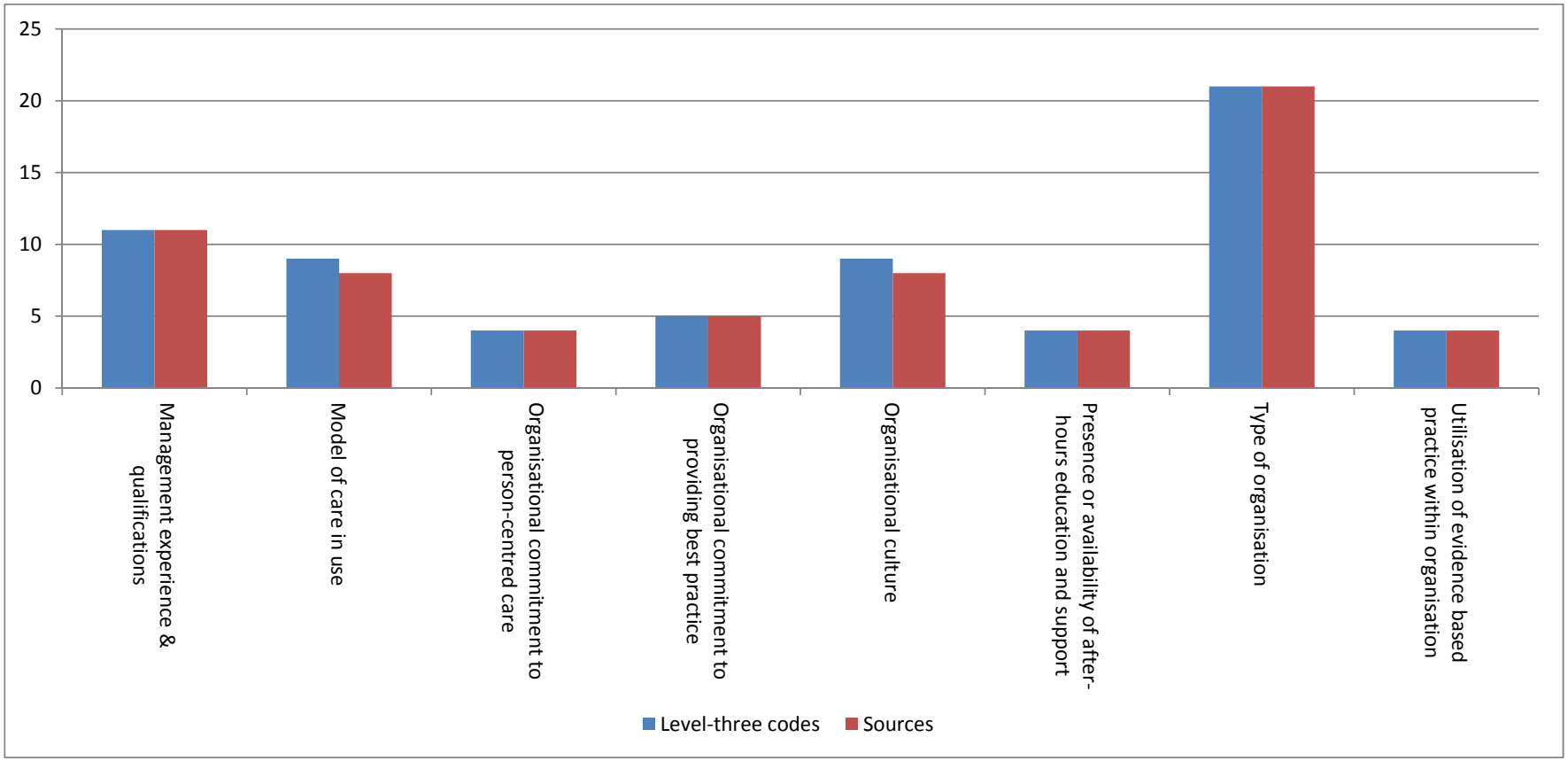

Figure 6.12: Organisational Characteristics - The frequency of coded data for each individual level-three code and the numbers of source documents

The seventh and final level-one code was Organisational Characteristics. This level-one code included five level-two codes: evidence-based practice; management characteristics; model of care; organisational characteristics; and organisational culture. Eight level-three codes were recorded within this category. Figure 6.12 presents the frequencies of each of the level three codes and the numbers of source documents in which they were coded. Type of organisation was the most frequently coded concept within this category.

At the completion of this analysis, a large volume of data had been coded into the seven level-one categories of Care and Caring, Communication, Coordination and Collaboration, Safety, Patient Characteristics, Nurses Work Environment and Organisational Characteristics. The most frequently coded concepts were: hours of available nursing care (78); skill mix of nursing staff (67); overall satisfaction with nursing care (49); number of patient or client falls (47); and presence of collaboration between healthcare professionals (46). The twenty most coded concepts are presented in Table 6.2.

In contrast to the items coded frequently, two concepts were not found within the literature at all. These were: family involvement in care; and incidence of self-harm post admission. A number of additional concepts were only coded infrequently. A list of the twenty least coded concepts is presented in Table 6.3. The most surprising of these were hand hygiene practices which was only identified once within the literature. Given the pivotal role of hand hygiene within infection control practices and the implementation of the five moments of hand hygiene initiative by the World Health Organisation in 2009 (Chou, Achan & Ramachandran 2012) it is surprising that data related to this has not been published within research papers examining nursing indicators and nursing-sensitive outcomes.

Table 6.2: The twenty most coded concepts from the template analysis (using the *a priori* coding template)

Concept	Category	Level-three codes	Source documents
Hours of available nursing care	Nurses Work Environment (includes Workload)	78	67
Skill mix of nursing staff	Nurses Work Environment (includes Workload)	67	60
Overall satisfaction with nursing care	Care and Caring	49	43
Number of patient or client falls	Safety	47	38
Presence of collaboration between healthcare professionals	Coordination and Collaboration	46	40
HAPU prevalence	Safety	46	35
Mortality rates	Safety	44	38
Experience of nursing staff	Nurses Work Environment (includes Workload)	42	37
Education of nursing staff	Nurses Work Environment (includes Workload)	42	36
Nursing work environment	Nurses Work Environment (includes Workload)	41	38
Length of stay	Safety	39	36
Reduction or relief of symptoms	Care and Caring	39	28
Patient or client perception of nursing care	Care and Caring	36	35
Improvements to functional status	Care and Caring	36	32
Patient or client participation in self care	Care and Caring	35	27
Nurse to patient ratio	Nurses Work Environment (includes Workload)	34	33
Patient or client perception of communication with nurses	Communication	32	29
Patient or client satisfaction with pain management	Care and Caring	32	26
Patient or client perception of being involved in decision making	Communication	31	27
Relationships with other health professionals	Coordination and Collaboration	31	27

Table 6.3: The twenty least coded concepts from the template analysis (using the *a priori* coding template)

Concept	Category	Level-three codes	Sources
Family involvement in care	Patient Characteristics	0	0
Incidence of self-harm post admission	Safety	0	0
Patient or client satisfaction with management of incidents or complaints	Communication	1	1
Ward or department type	Nurses Work Environment (includes Workload)	1	1
Patient's willingness to participate in care	Patient Characteristics	1	1
Hand hygiene practices	Safety	1	1
Family satisfaction with involvement in care (where relevant)	Care and Caring	2	2
Family satisfaction with information provided by nursing staff (where relevant)	Communication	2	2
Risk management strategies	Safety	2	2
Timely and successful referral to other health professionals	Coordination and Collaboration	3	2
Physical fitness of nursing staff	Nurses Work Environment (includes Workload)	3	2
Patient or client satisfaction with support provided to family	Care and Caring	3	3
Patient or client satisfaction with cultural awareness of nursing staff	Communication	3	3
Diagnosis Related Group (DRG)	Nurses Work Environment (includes Workload)	3	3
Peripheral IV associated blood stream infections	Safety	3	3
Presence or availability of members of the multidisciplinary team	Nurses Work Environment (includes Workload)	4	3
Organisational commitment to person-centred care	Organisational Environment	4	4
Presence or availability of after-hours education and support	Organisational Environment	4	4
Utilisation of evidence based practice within organisation	Organisational Environment	4	4
Unplanned readmissions	Safety	4	4

6.7.1.2 The measurement tools used to measure concepts in the a priori *coding template*

The next step in data analysis from the *a priori* coding template was to identify the measurement tools used to examine each of the concepts coded within the literature using the *a priori* coding template. To achieve this, each source document was reviewed to document the way in which that concept was measured within it. It was evident during this process that some concepts were measured as indicators with well documented data definitions and procedures for collection explained, others were present as indicators with less information about how they were collected and other concepts were measured using an identified measurement tool or instrument. Data examining measurement tools and / or methods were collected within a Microsoft Excel spreadsheet and analysed using pivot tables.

The data from this analysis are presented in the following discussion for each of the seven level-one codes. This discussion includes information about the measurement tools or indicators used to examine concepts from the *a priori* coding template within each level-one code. It includes the total number of times each measurement tool or indicator was coded within the category (level-one code) and the total number of concepts from the a priori coding template that was examined by each measurement tool or indicator.

The level-one code of Care and Caring contained 338 level-three codes and used ninety-two different measurement tools or indicators to measure the seventeen concepts included within the category. The ten most frequently used measurement tools or indicators from within this category are presented in Table 6.4.

Table 6.4: The top ten most frequently used measurement tools or indicators in the category of Care and Caring

Measurement Tool or Indicator	Total times coded	Total number of concepts covered (max. number = 17)
OPPNCS – Oncology Patients Perception of the Quality of Nursing Care Survey	19	10
La Monica Oberst Patient Satisfaction Scale	16	9
Caring Assessment Tool	15	15
Patient Judgement of Hospital Quality Questionnaire	12	10
Quality of Patient Perspective (QPP) Instrument	11	11
Picker Institute Patient Experience Survey	10	6
Human Caring Scale – Revised (HCS-R)	10	8
HCAHPS	10	9
The Person-Centred Nursing Index (PCNI)	10	10
Minimum Data Set 2.0	10	4

The second level-one code was Communication. This category contained 146 level-three codes and used thirty-five different measurement tools or indicators to measure the thirteen concepts that were included in this category. Table 6.5 presents the ten most frequently used measurement tools or indicators from within this category.

Table 6.5: The top ten most frequently used measurement tools or indicators in the category of Communication

Measurement Tool or Indicator	Total times coded	Total number of concepts covered (max. number = 13)
Oncology Patients Perceptions of the Quality of Nursing Care Scale (OPPQNCS)	13	6
La-Monica Oberst Patient Satisfaction Instrument	11	6
Caring Assessment Tool	9	9
Picker Institute Patient Experience Survey	9	8
The Person-Centred Nursing Index (PCNI)	7	7
Human Caring Scale - Revised (HCS-R)	7	5
Patient Evaluation of Emotional Care during Hospitalisation (PEECH)	6	6
Nursing-Sensitive Patient Satisfaction Scale (NSPSS)	6	6
Pain CQ Survey	6	6
Patient Judgement of Hospital Quality Questionnaire	5	5

The next level-one code was Coordination and Collaboration. This category contained 146 level-three codes and identified fifty-one different measurement tools or indicators for measuring the eleven different concepts within this category. Table 6.6 presents the ten most frequently used measurement tools or indicators from within this category.

Table 6.6: The top ten most frequently used measurement tools or indicators in the category of Coordination and Collaboration

Measurement Tool or Indicator	Total times coded	Total number of concepts covered (max. number = 11)
Nursing Work Index - Revised (NWI-R)	16	5
Coordination of Care Instrument (Shortell et al. 1991)	15	6
Unit Communication Instrument (Shortell et al. 1991)	9	6
Picker Institute Patient Experience Survey	8	7
Nursing Work Index - Practice Environment Scale (NWI-PES)	8	6
Nurse Questionnaire (International Hospital Outcomes Research Consortium)	7	4
Basel Extent of Rationing of Nursing Care (BERNCA) instrument	5	5
Pain CQ Survey	4	4
Quality of Nursing Care Instrument	4	4
Readiness for Hospital Discharge Scale (RHDS)	4	4

The fourth level-one code was Safety. This category contained 341 level-three codes and identified 101 different measurement tools or indicators to measure the twenty-four different concepts within this category. Table 6.7 presents the ten most frequently used measurement tools or indicators from within the category of Safety. This category is characterised by the use of indicators with data definitions rather than measurement tools or instruments that are used to collect data.

The fifth level-one code was Patient Characteristics. This category contained thirty-nine level-three codes and identified twenty different measurement tools or indicators for measuring the six different concepts within this category. Table 6.8 presents the ten most frequently used measurement tools or indicators from within this category.

Table 6.7: The top ten most frequently used measurement tools or indicators in the category of Safety

Measurement Tool or Indicator	Total times coded	Total number of concepts covered (max. number = 24)
Hospital acquired pressure ulcer prevalence (HAPU)	29	2
Falls	23	2
Pressure ulcer incidence	22	2
Mortality	21	1
Falls per 1000 bed days	18	2
Failure to rescue (from patient discharge data)	16	1
Length of stay	10	1
Nosocomial infections	8	3
Central line associated blood stream infection -CLBSI	7	2
Falls with injury	7	1

Table 6.8: The top ten most frequently used measurement tools or indicators in the category of Patient Characteristics

Measurement Tool or Indicator	Total times coded	Total number of concepts covered (max. number = 6)
Prior living conditions	3	3
OASIS	3	3
Base and Instrumental Activities of Daily Living (ADL and IADL)	3	3
Functional Improvement Measure (FIM)	3	3
Patient's perceived health status	3	3
Leatt Measure of Nursing Technology	3	3
Mini-Mental State Examination (MMSE)	3	3
Minimum data set 2.0	3	3
Sickness Impact Profile (SIP)	2	2
Co-morbidity index	2	2

The next level-one code was Nurses Work Environment (including Workload). This category contained 393 level-three codes and identified 121 different measurement tools or indicators for measuring the twenty-three concepts within this category. Table 6.9 presents the ten most frequently used measurement tools or indicators from within this category.

Table 6.9: The top ten most frequently used measurement tools or indicators in the category of Nurses Work Environment (including Workload)

Measurement Tool or Indicator	**Total times coded**	**Total number of concepts covered (max. number = 23)**
Nursing Work Index - Revised (NWI-R)	39	16
RN years' experience	29	1
RN education	21	1
RN hours (%)	20	3
RN HPPD, non RN HPPD	19	3
Nursing skill mix	17	1
Patient: RN ratio	15	1
Nursing HPPD	13	2
Percentage of Agency staff	8	1
Patient complexity (numerical rating)	7	2

The final level-one code was Organisational Characteristics. This category contained ninety-seven level-three codes and identified twenty-six different measurement tools or indicators for measuring the eight concepts within the category. Table 6.10 presents the ten most frequently used measurement tools or indicators from within this category.

Table 6.10: The top ten most frequently used measurement tools or indicators in the category of Organisational Characteristics

Measurement Tool or Indicator	Total times coded	Total number of concepts covered (max. number = 8)
Nursing Work Index - Revised (NWI-R)	16	7
Hospital size (by average daily census)	12	1
Teaching status (nonteaching, teaching, major teaching status)	11	1
Ownership of hospital (non-profit, for profit, government)	10	1
Location (urban or rural)	9	1
Unionisation of hospitals	4	1
Hospital margin	3	1
Payer mix	3	1
Patient care model	3	1
Nursing Work Index – Practice Environment Scale (NWI-PES)	3	3

At the completion of this analysis, a large volume of data about the measurement tools used to measure the concepts within each of the seven level-one categories had been gathered. The next step taken was to explore the data for the most common measurement tools and indicators across the entire data set. This data is presented in two different tables. Table 6.11 presents the measurement tools and indicators that were mostly frequently coded and presents this information by category and with a total. Table 6.12 presents the measurement tools and indicators that were coded across the widest number of different concepts by category and in total.

Table 6.11: The most frequently coded measurement tools and indicators by category

Measurement Tool or Indicator	Care and Caring	Communication	Coordination and Collaboration	Safety	Patient Characteristics	Nurses Work Environment	Organisational Characteristics	Total
Nursing Work Index – Revised (NWI-R)	0	0	16	0	0	39	16	**71**
Oncology PatientsPperceptions of the Quality of Nursing Care Scale (OPPQNCS)	19	13	4	1	0	0	0	**37**
Picker Institute Patient Experience Survey	10	9	8	1	1	0	0	**29**
HAPU prevalence	0	0	0	29	0	0	0	**29**
RN year's experience	0	0	0	0	0	29	0	**29**
La Monica Oberst Patient Satisfaction Scale	16	11	0	2	0	0	0	**29**
Caring Assessment Tool	15	9	1	0	0	0	0	**25**
Falls	0	0	0	23	0	0	0	**23**
Pressure ulcer incidence	0	0	0	22	0	0	0	**22**
RN education	0	0	0	0	0	21	0	**21**
Mortality	0	0	0	21	0	0	0	**21**
RN hours (%)	0	0	0	0	0	20	0	**20**
RN HPPD, Non RN HPPD	0	0	0	0	0	19	0	**19**
Human Caring Scale – Revised (HCS-R)	10	7	0	2	0	0	0	**19**
Falls per 1000 bed days	0	0	0	0	0	18	0	**18**
The Person-Centred Nursing Index (PCNI)	10	7	1	0	0	0	0	**18**
Pain CQ Survey	8	6	0	1	1	0	1	**17**
IHOS Nurse Questionnaire	0	0	7	0	0	7	3	**17**
Nursing-Sensitive Patient Satisfaction Scale (NSPSS)	8	6	0	2	1	0	0	**17**
Nursing Work Index – Practice Environment Scale (NWI-PES)	0	0	8	0	0	6	3	**17**

Table 6.12: The most frequently coded measurement tools and indicators by coverage of concepts in each category

Measurement Tool or Indicator	**Care and Caring**	**Communication**	**Coordination and Collaboration**	**Safety**	**Patient Characteristics**	**Nurses Work Environment**	**Organisational Characteristics**	**Total**
Nursing Work Index – Revised (NWI-R)	0	0	5	0	0	16	7	**28**
Caring Assessment Tool	15	9	1	0	0	0	0	**25**
Picker Institute Patient Experience Survey	6	8	7	1	1	0	0	**23**
Oncology Patients Perceptions of the Quality of Nursing Care Scale (OPPQNCS)	10	6	3	1	0	0	0	**20**
The Person-Centred Nursing Index (PCNI)	10	7	1	0	0	0	0	**18**
La Monica Oberst Patient Satisfaction Scale	9	6	0	2	0	0	0	**17**
Pain CQ Survey	8	6	0	1	1	0	1	**17**
Nursing-Sensitive Patient Satisfaction Scale (NSPSS)	8	6	0	2	1	0	0	**17**
Quality of Nursing Care Instrument	4	5	4	3	0	0	0	**16**
Human Caring Scale – Revised (HCS-R)	8	5	0	2	0	0	0	**15**

Following the completion of the analysis of data from the *a priori* coding template, deductive reasoning was used to identify a set of indicators that could be used to measure the important concepts within the conceptual framework. This was achieved through using the findings from the template analysis to identify existing measurement tools where multiple concepts were measured. An assessment of the validity and reliability of the data collection methods and an evaluation of the maximum spread of concepts amongst tools were used to identify the best possible sources of data for the indicator set. The process of evaluating measurement tools and individual indicators is now presented.

6.7.1.3 Evaluation of measurement tools

The measure evaluation criteria that are endorsed by the National Quality Forum (NQF) (2013) were used to assess the measurement tools that evaluated the widest spread of concepts. The rationale for using this framework for evaluation was that it is the criteria used by the NQF in the USA to evaluate potential healthcare measures prior to their endorsement**.** The criteria used in the NQF measure evaluation criteria were: importance to measure and report; scientific acceptability of measure properties; feasibility; usability and use; and related and competing measures (National Quality Forum (NQF) 2013).

Consideration was also given when evaluating measurement tools to the extent to which a measurement tool measured multiple concepts within and across categories (as seen in Table 6.12).

All ten measurement tools identified in Table 6.12 were evaluated using these criteria. The outcomes of this evaluation for the Nursing Work Index-Revised (NWI-R), Caring Assessment Tool and the Picker Institute Patient Experience Survey are described in the following section. These three measurement tools provided the greatest spread of concepts and are recommended for inclusion in an indicator set for measuring the quality and safety outcomes of nursing work.

6.7.1.3.1 Nursing Work Index – Revised (NWI-R)

The NWI-R was developed by Aiken and colleagues (Aiken & Patrician 2000; Aiken et al. 2001a). It is a fifty-seven item instrument that measures a nurses' practice environment at both a hospital and unit level and has been used to measure nurses' practice environments in a variety of countries [USA: Aiken et al. (2001a); Canada: McCusker et al. (2004); Ireland: Slater and McCormack (2007); Iceland: Gunnarsdóttir et al. (2009); New Zealand: Flynn, Carryer and Budge (2005); Brazil: Gasparino, Guirardello and Aiken (2011); South Korea: Kim et al. (2013); and Australia: Joyce-McCoach and Crookes (2011)].

An assessment of the NWI-R using the measure evaluation criteria endorsed by the NQF has been summarised into Table 6.13. This tool meets the criteria of: importance to measure and report; scientific acceptability of measure properties; feasibility; usability and use; and related and competing measures. It is thus an appropriate tool to use within an indicator set for measuring the quality and safety of nursing care.

Table 6.13: Assessment of the Nursing Work Index – Revised (NWI-R) using measure evaluation criteria endorsed by the National Quality Forum (NQF)

NQF (2013) endorsed Measure Evaluation Criteria	**Nursing Work Index – Revised (NWI-R)**
Importance to measure and report	▪ Measures structure and process measures within three categories of the conceptual framework for measuring the quality and safety of nursing care. These include: Coordination and Collaboration; Nurses Work Environment; and Organisational Characteristics. ▪ The NWI-R measures at least 28 different concepts in the framework. ▪ Collects nursing specific data at unit and / or organisational level. ▪ Collection and reporting of data can facilitate unit and organisational change.
Scientific acceptability of measure properties	▪ NWI-R has been used across the world as an accepted measure of nurses' practice environment. ▪ Most widely used tool to assess the nursing practice environment. ▪ Adaptations to national populations have also been validated.
Feasibility	▪ Administered as a survey to nurses within an organisation. ▪ Administered annually to facilitate trend data.
Usability and use	▪ Available as a survey. ▪ Electronic survey could be developed. ▪ Validated adaptations available for many countries.
Related and competing measures	▪ Derivative tools are also available e.g. Practice Environment Scale – Nursing Work Index (PES-NWI). The use of the PES-NWI would provide a similar amount of data and could be seen as a potential substitute for the NWI-R.

6.7.1.3.2 Caring Assessment Tool

The Caring Assessment Tool was originally developed in 1990 and is theoretically based upon Jean Watson's Theory of Human Caring (Watson 1979; Watson 1985). It has been used to assess the quality of the patient and Registered Nurse relationship; the effectiveness of professional practice models; and to evaluate patient-centred approaches to nursing care (Duffy, Hoskins & Seifert 2007; Duffy & Brewer 2011). The Caring Assessment Tool is used in acute care environments and measures patient-centred care from the perspective of the person being *cared for* (Duffy & Brewer 2011; Duffy, Brewer & Weaver 2014). A twenty-seven item version of the Caring Assessment Tool was validated in a prospective, descriptive study of 1,111 patients within twelve hospitals in four geographically distinct regions within the USA (Duffy, Brewer & Weaver 2014).

An assessment of the Caring Assessment Tool using the measure evaluation criteria endorsed by the NQF has been summarised in Table 6.14. The Caring Assessment Tool meets the criteria of: importance to measure and report; scientific acceptability of measure properties; feasibility; usability and use; and related and competing measures. It is thus an appropriate tool to use within an indicator set for measuring the quality and safety of nursing care.

Table 6.14: Assessment of the Caring Assessment Tool using measure evaluation criteria endorsed by the National Quality Forum (NQF)

NQF (2013) endorsed Measure Evaluation Criteria	Caring Assessment Tool
Importance to measure and report	▪ Measures process and outcome measures within three categories of the conceptual framework for measuring the quality and safety of nursing care. These include: Care and Caring; Communication; and Coordination and Collaboration. ▪ Measures at least 25 different concepts in the framework. ▪ Collects data about person-centred care and the patient and nurse relationship at unit level. ▪ Collection and reporting of data can facilitate unit and organisational change.
Scientific acceptability of measure properties	▪ The Caring Assessment Tool has been used in multiple studies (Duffy & Brewer 2011; Duffy, Hoskins & Seifert 2007; Duffy, Brewer & Weaver 2014). ▪ The Caring Assessment Tool is based upon a widely accepted theoretical construct (Watson's Theory of Human Caring). ▪ Validity and reliability established by Duffy, Brewer and Weaver (2014).
Feasibility	▪ Administered as a survey to patients within an organisation (unit or organisation level).
Usability and use	▪ 27 items that are easily understood and interpreted. ▪ Available as a pen and paper based survey. ▪ Electronic survey could be developed.
Related and competing measures	▪ A large number of measurement / assessment tools are available to assess the concept of caring. The Person-Centred Nursing Index (PCNI) was also considered but not seen as feasible due to the complex procedures for data collection

6.7.1.3.3 Picker Institute Patient Experience Survey

The Picker Institute Patient Experience Survey has been developed by Picker Europe and Picker Institute (USA) and customised to different countries and healthcare environments. It assesses the eight principles of patient-centred care that have been developed by the Picker Institute. Each survey is based upon a reliable and valid set of fifteen core questions known as the PPE-15 (Jenkinson et al. 2003). Organisations and jurisdictions can choose to use only these questions but most choose to supplement them with questions from an additional bank of questions to meet the needs of the organisation. The survey is administered to patients after they have been discharged from hospital. The Picker Institute Patient Experience Survey has been used in the United Kingdom, Germany, Sweden, Switzerland, United States of America, Hong Kong and Australia (Jenkinson, Coulter & Bruster 2002; Wolf et al. 2012; Wong et al. 2011; Australian Commission on Safety and Quality in Health Care 2012).

An assessment of the Picker Institute Patient Experience Survey using the measure evaluation criteria endorsed by the NQF has been summarised in Table 6.15. It meets the criteria of: importance to measure and report; scientific acceptability of measure properties; feasibility; usability and use; and related and competing measures. It is thus an appropriate tool to use within an indicator set for measuring the quality and safety of nursing care.

Table 6.15: Assessment of the Picker Institute Patient Experience Survey using measure evaluation criteria endorsed by the National Quality Forum (NQF)

NQF (2013) endorsed Measure Evaluation Criteria	Picker Institute Patient Experience Survey
Importance to measure and report	▪ Measures process and outcome measures within five categories of the conceptual framework for measuring the quality and safety of nursing care. These include: Care and Caring; Communication; Coordination and Collaboration; Safety; and Patient Characteristics. ▪ Measures at least 23 different concepts in the framework. ▪ Collects data about patient experiences and patient-reported outcomes at the organisational level. ▪ Collection and reporting of data can facilitate unit and organisational change.
Scientific acceptability of measure properties	▪ The Picker Institute Patient Experience Survey has been used across the world and is a recognised survey for assessing the patient's experiences of healthcare. ▪ Validity and reliability established by Jenkinson, Coulter and Bruster (2002).
Feasibility	▪ Administered as a survey to patients following discharge. ▪ Established methodology being used on a large scale in UK and Australia.
Usability and use	▪ Variable numbers of items that are easily understood and interpreted. ▪ Most commonly used as a hardcopy survey that is mailed to participants and then returned via mail system. ▪ Electronic survey could be developed.
Related and competing measures	▪ A large number of patient satisfaction and patient experience surveys are available. HCAHPS and the Press Ganey Patient Satisfaction Surveys are used extensively in the USA (and elsewhere) and could be seen as a potential substitute for the Picker Institute Patient Experience Survey.

6.7.1.4 Evaluation of indicators

The measure evaluation criteria endorsed by the National Quality Forum (NQF) (2013) were also used to assess indicators that measured one or more concepts within the conceptual framework for measuring the quality and safety of nursing care. Indicators were identified in the findings of the template analysis.

The criteria for evaluation of each potential indicator were: importance to measure and report; scientific acceptability of measure properties; feasibility; usability and use; and related and competing measures (National Quality Forum (NQF) 2013). Consideration was also given to the extent to which an indicator was already being used as a nursing-sensitive outcome measure within the existing literature and datasets. Most indicators were sourced from within the categories of Safety, Patient Characteristics, Nurses Work Environment, and Organisational Characteristics (as seen in Tables 6.7, 6.8, 6.9 and 6.10).

A large number of potential indicators were assessed using the measure evaluation criteria endorsed by the NQF. The indicators that have been recommended for use in the indicator set for measuring the quality and safety outcomes of nursing practice are categorised into structural, process and outcome measures and are represented in tables 6.16, 6.17 and 6.18 respectively.

Table 6.16: Structural indicators for inclusion in an indicator set for measuring the quality and safety outcomes of nursing care

Indicator	Brief definition	Level of data	Data collection method
Nursing care hours	Productive hours worked by nurses in direct patient care	Unit	HR systems
Nursing staff mix	Proportion of different levels of nursing staff (e.g. RN, EN/LPN, AIN)	Unit	HR systems
Nursing staff education and experience	Years of education, highest nursing degree, years of nursing experience	Unit	Nurse questionnaire (demographic data)
Casual staff hours (%)	Percentage of productive hours worked by nurses in direct patient care that are performed by casual employees	Unit	HR systems
Agency hours (%)	Percentage of productive hours worked by nurses in direct patient care that are performed by agency nurses	Unit	HR systems
Overtime hours (%)	Percentage of productive hours worked by nurses in direct patient care that are overtime	Unit	HR systems
Hospital size	Total number of beds as measured by average daily census	Hospital	Hospital system
Hospital ownership	Categorisation of hospital: Public; Private	Hospital	Hospital system
Ward type	Categorisation of ward: Medical: Surgical; Medical / Surgical; Day-only; Stepdown/HDU; Critical Care/Intensive Care	Unit	Hospital system
Patient turnover	Sum of admissions, discharges and transfers divided by average daily census	Unit	Hospital system
Nursing staff turnover	Voluntary turnover of nursing staff (resignations and recruitments) as a percentage of total staffing on unit	Unit	HR systems
Other care hours	Productive hours worked by staff other than nurses in direct patient care	Unit	HR systems

Table 6.17: Process indicators for inclusion in an indicator set for measuring the quality and safety outcomes of nursing care

Indicator	Brief definition	Level of data	Data collection method
Pressure ulcer risk assessment in place	Proportion of patients with a current risk assessment for preventing a pressure ulcer – evaluated during a pressure ulcer prevalence study	Unit	Data from pressure ulcer prevalence study
Falls prevention risk assessment in place	Proportion of patients with a current risk assessment for preventing patient falls (evaluated during a pressure ulcer prevalence study)	Unit	Data from pressure ulcer prevalence study
Presence of safe medication administration processes	Systematic observation and recording of 100 doses of medication administered for each participating unit	Unit	Observational measure (CALNOC methodology)
Hand-washing practices	Systematic recording and observation of 100 hand hygiene opportunities for each participating unit	Unit	Observational measure (WHO 5 moments of hand hygiene)

Table 6.18: Outcome indicators for inclusion in an indicator set for measuring the quality and safety outcomes of nursing care

Indicator	Brief definition	Level of data	Data collection method
Pressure ulcer prevalence	Proportion of patients on a unit with a pressure ulcer; further differentiated by hospital acquired pressure ulcer	Unit	Pressure Ulcer Prevalence study
Patient falls	Unplanned descent to the floor, does not include assisted falls	Unit	Incident data / Unit records
Medication administration errors	A deviation from the medication ordered by the medical officer: error committed during administration	Unit	Observational measure (CALNOC methodology)
Staphylococcus Aureus bloodstream infections (hospital onset)	Number of Staphylococcus Aureus bloodstream infections – hospital onset (Rate per 10,000 occupied bed days)	Hospital	Infection Control Data
Central line associated blood-stream infection (ICU)	Number of central line associated blood-stream infections (Rate / 1000 line days)	Hospital	Infection Control Data

6.7.2 Findings from the *other* category

As described in section 6.6.2 the aim of the data analysis of the *other* concepts was threefold. The first aim was to identify the concepts being measured within the literature that were not captured as part of the conceptual framework development in Phase 2 of this research project. Secondly, it sought to evaluate any gaps in the aforementioned conceptual framework. Thirdly, it aimed to identify and evaluate any additional measurement tools or indicators not captured within the data collection and analysis of the *a priori* coding template.

To achieve this, the *other* category was used to code concepts that were identified within literature that met the inclusion criteria but contained concepts that were not included within the *a priori* coding template. Descriptive statistics are used to present the frequency of coded data within the *other* category. A thematic analysis of the data within the *other* category was also undertaken and is presented later in the chapter.

The descriptive statistics examining the frequency of coded data within the *other* category are now presented. These findings build knowledge on the concepts being examined within the published literature on nursing-sensitive patient outcomes that did not fit within the *a priori* coding template. Findings across the whole data set as well as the process used to theme the data into categories are presented.

6.7.2.1 The frequency of coded concepts with the other category

A total of 405 concepts were coded into the *other* category. The twenty concepts that were coded most frequently are presented in Table 6.19. The concepts presented in this table account for fifty-one percent of all coded data. This equates to 207 of the 405 concepts that were coded into the *other* category. Despite over half of the coded concepts appearing frequently, many of the *other* concepts were very diverse with 182 of the total 405 concepts being coded three or fewer times. This equates to forty-five percent of all coded data being coded less than three times.

In an attempt to organise the coded data into meaningful categories, all level-three codes were reviewed. Similar concepts were then grouped together and given a level-two code

name to reflect the overarching concept being measured. After level-three and level-two codes had been identified, NVivo was used to theme the concepts being measured within the level-two codes and each of the level-one codes within them. A level-one code name was developed to summarise the concepts being explored within each of its hierarchical codes.

Table 6.19: The twenty most coded concepts in the *other* category from the template analysis

Concept	Level-three codes	Source documents
Urinary tract infection	28	26
Pneumonia	22	21
Nurse assessed quality of care	20	19
Nurses' job satisfaction	18	15
Burnout	12	11
Job dissatisfaction	11	10
Emotional exhaustion	11	8
Restraint prevalence	9	9
DVT	8	8
Tasks left undone	8	7
Nurse reports of adverse events	8	6
Needleman's adverse events	7	5
Employment status (part or full time)	6	6
NOC outcomes	6	6
Rationing of care	6	5
Nurse intention to leave	6	5
Restraint use	6	5
Shock or cardiac arrest	5	5
Pulmonary failure	5	5
Sepsis	5	5

Six level-one codes were identified. They were: fundamental components of nursing; organisational outcomes; patient reported outcomes (PRO's); safety outcomes; outcome sets; and nurse staffing concepts. The level-one codes of nurse staffing concepts and safety outcomes had the largest volumes of codes allocated to them and collectively accounted for sixty-nine percent of all coded data within the *other* category. A visual illustration of the spread of the coded data amongst the level-one codes is presented in

Figure 6.13. These proportions are similar to the findings from the analysis of coded concepts in the *a priori* coding template where forty-nine percent (49%) of data was coded in the categories of Nurses Work Environment (including Workload) and Safety.

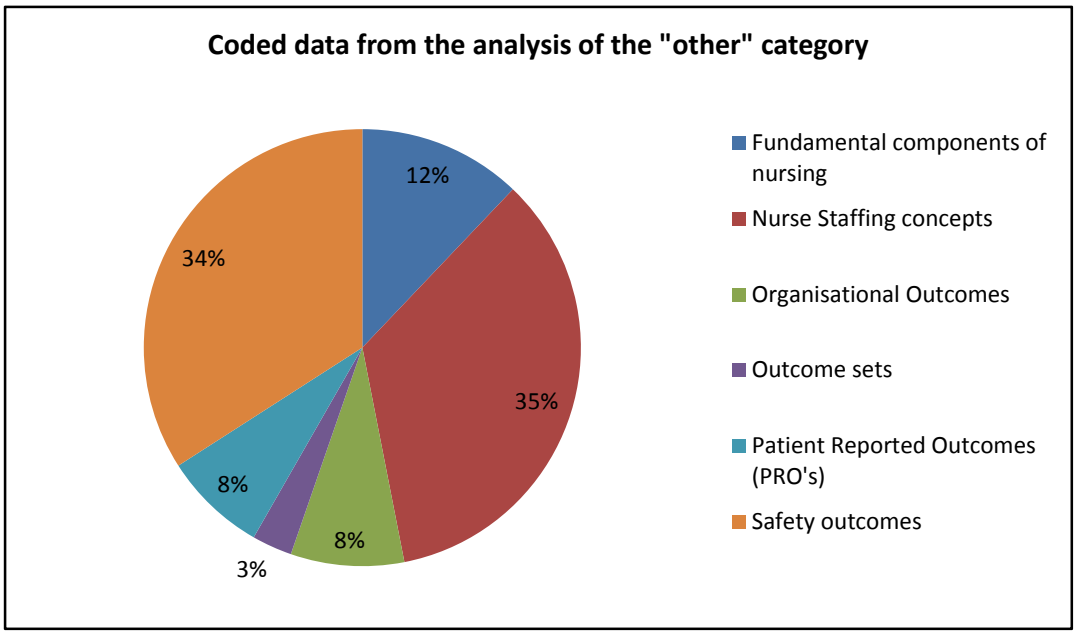

Figure 6.13: Data codes for each level-one code from the analysis of coded data within the *other* category

A thematic analysis of the coded data from within the *other* category is now presented. This thematic analysis was undertaken to meet the three aims of analysing the data coded within the *other* category. The first aim was to identify any concepts measured within the literature that were not captured as part of the conceptual framework development in Phase 2 of this research project. The second aim was to evaluate any gaps in the aforementioned conceptual framework. The third and final aim was to identify and evaluate any additional measurement tools or indicators not captured within the data collection and analysis of the *a priori* coding template.

6.7.2.2 Thematic analysis of data within the other category

Thematic analysis is a method used for identifying, analysing and reporting patterns within qualitative data (Braun & Clarke 2006). Analysis of the data within the *other* category identified six main themes. Each of these themes has come from data coded into the *other* category. The codes were generated when the concepts being discussed within the literature did not fit into one of the *a priori* codes developed from the conceptual framework for measuring the quality and safety outcomes of nursing care (as outlined in Chapter 5). These concepts were then categorised as *other* concepts.

Each of the six themes equates to a level-one code and incorporates a number of level two codes and level-three codes as identified within the coding of data within the template analysis. A discussion of each of these themes is now presented.

6.7.2.2.1 Fundamental components of nursing

This theme included forty-nine data codes that were categorised into four sub-themes. These sub-themes were the equivalent of level-two data codes in the hierarchical coding structure. A visual representation of the theme of fundamental components of nursing care is presented in Figure 6.14.

The theme of fundamental components of nursing encompassed a collection of concepts that examined caring, communication, the processes of care, management of patient symptoms and what happens when nursing care is not provided. Most concepts within this theme were coded in only one or two different source documents. The only exception to this, were the concepts related to the rationing of nursing care and the measurement of tasks left undone. These concepts were measured by a number of different measurement tools with the Nurse Questionnaire from the International Hospitals Outcome Consortium (Aiken et al. 2001b; Aiken et al. 2001a; Clarke & Aiken 2008) and the Basel Extent of Rationing of Nursing Care (BERNCA) tool (Schubert et al. 2008; Schubert et al. 2009; Schubert et al. 2012) being the most commonly used instruments to examine this concept. These instruments were also identified within the analysis of data from the *a priori* coding template.

The Nurse questionnaire from the International Hospitals Outcome Consortium was identified as the measurement tool for ten concepts within the *a priori* coding template. The Basel Extent of Rationing of Nursing Care (BERNCA) tool was used to measure fourteen different concepts from within the *a priori* coding template. For this reason the measurement of concepts related to rationing of nursing care and the measurement of tasks left undone, was considered to already be encompassed within the concepts included in the conceptual framework for measuring the quality and safety outcomes of nursing work. No other concepts were deemed to require inclusion.

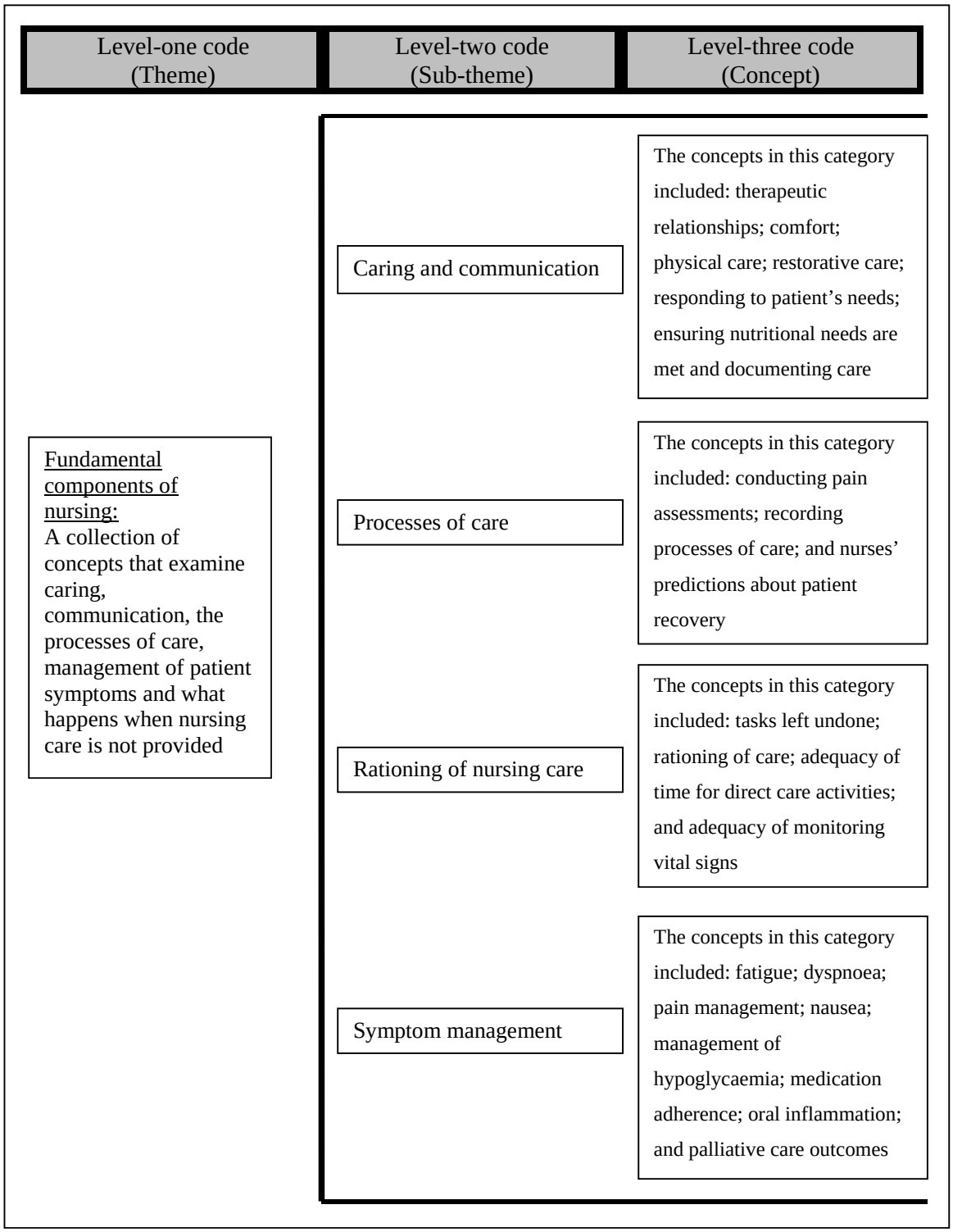

Figure 6.14: Visual illustration of the Level-one code 'Fundamental components of nursing' including a description of the level-two and level-three codes within the theme.

6.7.2.2.2 Organisational outcomes

The theme of Organisational Outcomes included thirty-four data codes that were categorised into three sub-themes: financial and performance measures; leadership of organisation or unit; and organisational characteristics. A visual representation of the theme of Organisational outcomes is presented in Figure 6.15.

Most concepts within this theme were coded in only one or two source documents. There were two exceptions to this: cost per hospital encounter; and hospital-teaching status. Cost per hospital encounter was coded four times and related to the use of administrative data to calculate the cost of all healthcare, including nursing, during the patient's episode of care. This data was coded in research by Doran, Midon and Clarke (2011), Keleher et al. (2009), Pappas (2008) and Rimar and Diers (2006).

Hospital-teaching status was coded three times. Classification of a teaching-hospital status on a dichotomous scale (Yes; No) was used in two research papers (Kaestner & Guardado 2008; Tourangeau et al. 2007). Classification of teaching-hospital status as a categorical variable (major teaching hospital; other teaching hospital; or non-teaching hospital) was used in research by Needleman et al. (2006). The use of teaching-hospital status as a characteristic of an organisation complemented the *a priori* concept of 'Type of hospital' which was coded twenty-one times within the template analysis. Due to the complementarity of hospital-teaching status with the existing concept of 'Type of hospital' it was included amongst the concepts to be measured as part of the conceptual framework for measuring the quality and safety outcomes of nursing care.

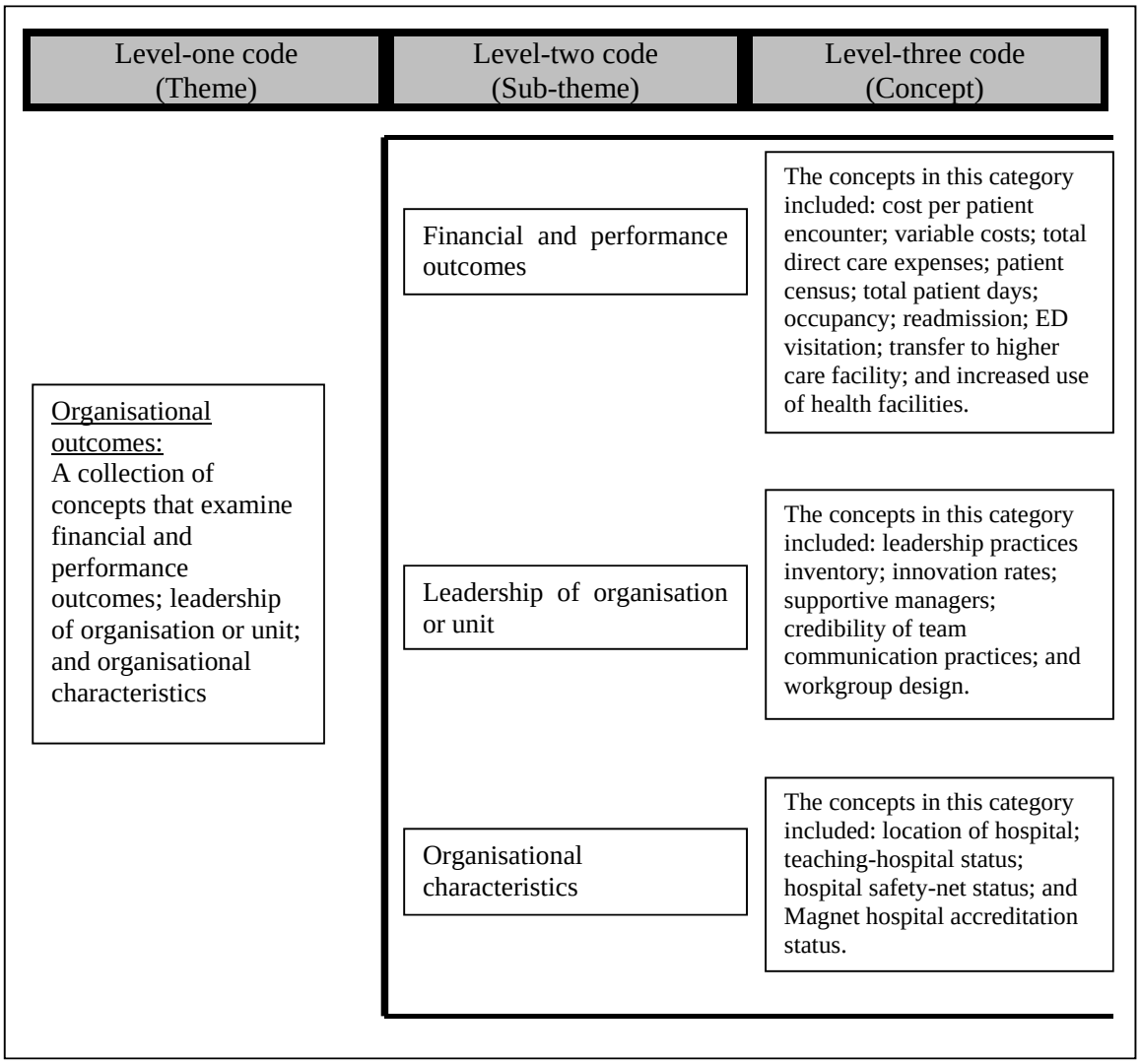

Figure 6.15: Visual illustration of the Level-one code 'Organisational Outcomes', including a description of the level-two and level-three codes within the theme.

6.7.2.2.3 Patient reported outcomes

This theme included thirty-one data codes that were categorised into four sub-themes. The sub-themes were: complaints, satisfaction and perceived benefit; family or carer outcomes; patient characteristics; and psychological outcomes. A visual representation of the theme of patient reported outcomes is presented in Figure 6.16.

As described in previous themes, most concepts within this theme were coded in only one or two source documents. There was one exception to this: patient age. Patient age was coded three times during the template analysis (Bae, Mark & Fried 2010; Doran et al. 2002; Rimar & Diers 2006). Given that patient age was a concept presented to participants in the modified Delphi survey, and it did not reach consensus agreement on its' importance, it was not considered for inclusion in the conceptual framework for measuring the quality and safety outcomes of nursing care. No other items were deemed to require inclusion.

Level-one code (Theme)	Level-two code (Sub-theme)	Level-three code (Concept)
Patient reported outcomes: A collection of concepts that examine complaints, satisfaction and perceived benefit; family or carer outcomes; patient characteristics; and psychological outcomes	Complaints, satisfaction and perceived benefit	The concepts in this category included: patient complaints; patient satisfaction; and perceptions of patients about how they benefited from nursing care.
	Family or carer outcomes	The concepts in this category included: family burden; and caregiver decline.
	Patient characteristics	The concepts in this category included: demographic information about the patient including age and education; patients' ratings of their own health status; previous hospitalisations; healthcare usage; and patients' rating of their readiness to resume usual role and social functioning.
	Psychological outcomes	The concepts in this category included: patient well-being; optimism; self-representation; anxiety; depression; mood disturbance; psychological distress; and psychological adjustment to hospitalisation.

Figure 6.16: Visual illustration of the Level-one code 'Patient reported outcomes', including a description of the level-two and level-three codes within the theme.

6.7.2.2.4 Safety outcomes

This theme included 138 data codes that were categorised into five sub-themes. The sub-themes were: general adverse events; specific adverse events; body system approaches; infection control; and restraint. Many concepts within this theme were coded multiple times with seven of the twenty-nine level-three codes in this theme being coded more than five times. The ten most coded level-three concepts within this theme are presented in Table 6.20.

Table 6.20: The ten most coded concepts in the theme of safety outcomes from the *other* category of the template analysis

Concept	Level-three codes	Source documents
Urinary tract infection	28	26
Pneumonia	22	21
Restraint prevalence	9	9
DVT	8	8
Nurse reports of adverse events	8	6
Needleman's adverse events	7	5
Restraint use	6	5
Shock or cardiac arrest	5	5
Pulmonary failure	5	5
Sepsis	5	5

A visual representation of the theme of safety outcomes is presented in Figure 6.17.

Level-one code (Theme)	Level-two code (Sub-theme)	Level-three code (Concept)
Safety outcomes: A collection of concepts that examine adverse events (both generally and in relation to specific conditions), body system approaches to safety, infection control and restraint use	Adverse events (general)	The concepts in this category included: adverse events; hospital acquired injury; complications; and nurse reports of adverse events.
	Adverse events (specific)	The concepts in this category included: DVT; shock or cardiac arrest; post-operative metabolic derangement; ventilator associated pneumonia; unplanned extubation; dehydration; bowel complications; and paediatric peripheral IV infiltration.
	Body system approaches	The concepts in this category included: urinary tract infection; pneumonia; respiratory tract infection; pulmonary failure; upper GI bleeding; AMI mortality; CNS; neurological complications; shock and cardiac failure; and Needleman's list of complications.
	Infection control	The concepts in this category included: sepsis; wound infections; post-operative infection; and post-operative sepsis.
	Restraint	The concepts in this category included: restraint prevalence; restraint use.

Figure 6.17: Visual illustration of the Level-one code 'Safety outcomes', including a description of the level-two and level-three codes within the theme.

Despite the large volume of concepts coded into this theme, only one level-three code was identified for inclusion into the conceptual framework for measuring the quality and safety outcomes of nursing care, namely restraint prevalence and / or restraint use. The rationale for inclusion of this concept was that a large majority of the research using this measure collected the data using prevalence surveys (Bolton et al. 2007a; Sullivan et al. 2004), or from medical record documentation of restraint use (Whitman et al. 2002b). It therefore provided valid and reliable data recorded at unit level on the use of restraints. While this concept was not identified in the Phase 2 component of this research, when examining international studies, physical restraint and its use by nurses was a frequently measured concept and its omission from the conceptual framework that was being developed may have implications for international comparisons in the future. For this reason it was included.

A number of high volume coded concepts within this theme were dismissed as items to be included within the conceptual framework due to the requirement for all items to have explicit linkages with nursing interventions, and the absence of processes of nursing care that could be used to evaluate them. This applied predominately to the level-three codes within the sub-themes of adverse events that were specifically described, and the body system approaches. The most frequently coded concepts amongst these were: urinary tract infection (coded 28 times); pneumonia (coded 22 times); and deep vein thrombosis (DVT) (coded 8 times). An additional group of concepts was coded as Needleman's adverse events (coded 7 times). Needleman's adverse events are used to describe a cluster of patient outcomes that are potentially sensitive to nursing using abstraction of data from coded medical record discharge abstracts (Needleman et al. 2001). This cluster includes urinary tract infections, upper GI bleeding, pneumonia, shock and cardiac arrest, sepsis, failure to rescue and mortality (Berney & Needleman 2006). This approach was not seen as compatible with the conceptual framework being developed in this research due to its reliance on data abstraction from discharge abstracts and the absence of unit level data that provided process or outcome measures for the concepts.

6.7.2.2.5 Outcome sets

This theme included twelve data codes that were categorised into a single subtheme. A visual representation of the theme of Outcome sets is presented in Figure 6.18.

This theme included three level-three codes that originate from the Nursing Outcomes Classification. They were: Nursing Outcomes Classification (NOC) (coded 6 times), Dignified Dying Tool (coded 3 times) and the Q-DIO (Quality of Nursing Diagnoses, Interventions and Outcomes) (coded once). Phaneuf's Nursing Audit; and the Agency for Healthcare Research and Quality (AHRQ) patient safety indicators and inpatient quality indicators, were also coded into this category.

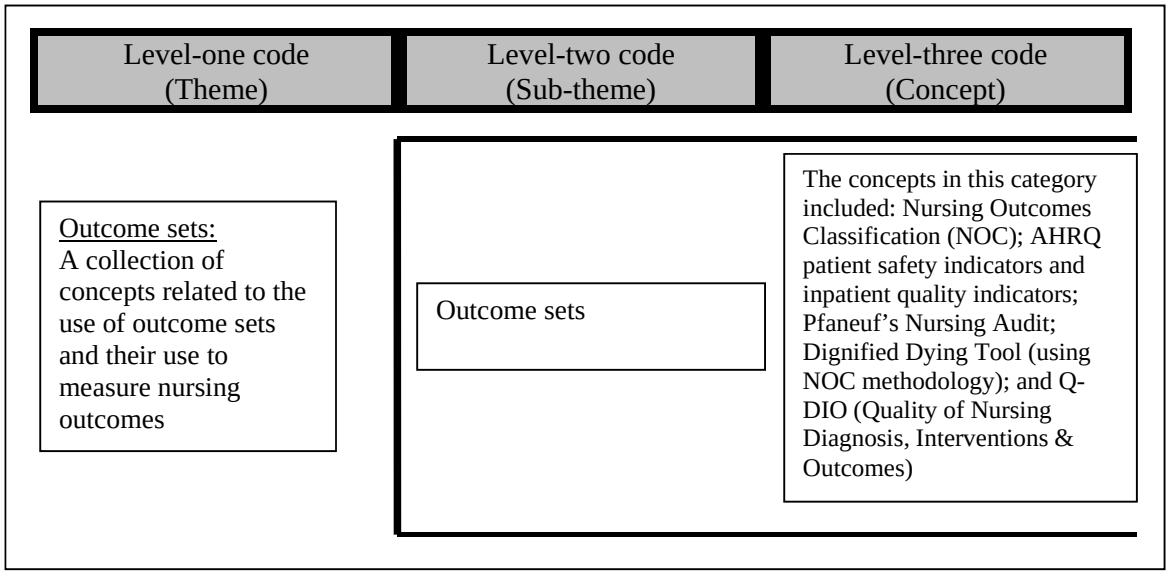

Figure 6.18: Visual illustration of the Level-one code 'Outcome sets', including a description of the level-two and level-three codes within the theme.

6.7.2.2.6 Nurse Staffing concepts

This theme included 141 data codes that were categorised into seven sub-themes: burnout; nurse characteristics; cost; leadership processes; quality; safety; and satisfaction. Many concepts within this theme were coded multiple times with the concepts of: nurse assessed quality of care; nurses job satisfaction; burnout; emotional exhaustion; and job dissatisfaction all coded more than ten times each.

Despite the frequency of these items, no concepts coded into this theme were identified as gaps within the conceptual framework for measuring the quality and safety outcomes of nursing care. The rationale for this was that the majority of concepts included in this category were focused upon nurse outcomes and hence were excluded from the study. The concepts that could be categorised as nursing characteristics included concepts already covered within the *a priori* coding template and the conceptual framework for measuring the quality and safety outcomes of nursing care.

A visual representation of the theme of Nurse staffing concepts is presented in Figure 6.19.

Level-one code (Theme)	Level-two code (Sub-theme)	Level-three code (Concept)
Nurse staffing concepts: A collection of concepts that examine burnout, the characteristics of nurses, cost, quality of care, safety, nurse satisfaction and leadership processes	Burnout	The concepts in this category included: burnout; emotional exhaustion; nurses' intention to leave and nurses' job-related stressors.
	Nurse characteristics	The concepts in this category included: employment status; specialist certification; sick leave, vacancy rates; nurse performance scales; unionisation of workforce; and percentage of total staff who are RNs.
	Cost	The concepts in this category included: NHPPD; nurse cost per hour; sitter hours; Nurse FTE's; and nursing intensity weights.
	Leadership processes	The concepts in this category included: control; empowerment; autonomy; interpersonal conflict; empathy; participation; morale and workgroup cohesion.
	Quality	The concepts in this category included: quality of care; nurse assessment of quality of care; nursing outcomes; and nursing activities.
	Safety	The concepts in this category included: nursing staff injuries; needlestick injuries: and verbal abuse.
	Satisfaction	The concepts in this category included: job satisfaction; job dissatisfaction; and well-being.

Figure 6.19: Visual illustration of the Level-one code 'Nurse staffing concepts', including a description of the level-two and level-three codes within the theme.

6.7.2.3 Summary of findings from the other category

The aim of analysing data coded within the *other* category was threefold. The first aim was to identify any concepts measured within the literature that were not captured as part of the conceptual framework development in Phase 2 of this research project. The second aim was to evaluate any gaps in the aforementioned conceptual framework. The third aim was to identify and evaluate any additional measurement tools or indicators not captured within the data collection and analysis of the *a priori* coding template.

A total of 405 concepts were coded into the *other* category during the template analysis. In keeping with the findings from the analysis of the *a priori* coding template, the majority for these (69%) could be broadly categorised as either related to nurse staffing or safety. The remainder examined a wide range of different concepts.

Following analysis of each of these 405 concepts and identification of the measurement methods used to collect them, no significant gaps were identified within the conceptual framework for measuring the quality and safety outcomes of nursing care. It is important to recognise that not all aspects of nursing care in all nursing environments can be included as part of this conceptual framework. The purpose of the conceptual framework is to articulate the important concepts for measuring the quality and safety outcomes of nursing care. This framework can then be used to identify how the quality and safety outcomes of nursing care can be measured.

Despite the fact that no significant gaps in the framework were identified, two additional concepts were identified for inclusion, namely hospital-teaching status; and restraint prevalence and / or restraint use. These two concepts complement existing concepts within the conceptual framework and would be included as indicators within the indicator set for measuring the quality and safety of nursing care. The indicators to measure these concepts were evaluated using the measure evaluation criteria endorsed by the National Quality Forum (NQF) (2013) and have been presented in Table 6.21

Table 6.21: Indicators for inclusion in the indicator set for measuring the quality and safety outcomes of nursing care following analysis of the *other* category

Indicator	Brief Definition	Level of data	Measurement Method
Hospital - teaching status	Categorisation of hospital: non-teaching; teaching; major teaching	Hospital	Hospital system
Restraint use prevalence	Proportion of patients on a unit who are restrained (evaluated during a pressure ulcer prevalence study)	Unit	Pressure ulcer prevalence study

6.8 The conceptual framework for measuring the quality and safety outcomes of nursing care

At the completion of Phase 3 of this multi-phase, mixed methods research project, the conceptual framework for measuring the quality and safety outcomes of nursing care was further refined. The development of the conceptual framework can be seen as an iterative process and representations of it have been produced at the conclusion of each phase of the research project (please refer to Figures 4.4, and 5.10)

The final representation can be seen in Figure 6.20. It illustrates the centrality of the elements of Care and Caring; Communication; Coordination and Collaboration; and Safety to measuring the processes and outcomes of nursing care. The elements of Patient Characteristics, Organisational Environment and the Nurses Work Environment are seen to be external to the central elements of the framework, but their influence is considered all-encompassing. It is important to recognise that this conceptual framework examines patient outcomes from nursing care. It does not attempt to depict nursing, organisational or societal outcomes that occur as a result of nursing care.

Figure 6.20: The conceptual framework for measuring the quality and safety outcomes of nursing care

6.9 Compilation of the indicator set for measuring the quality and safety outcomes of nursing care

A final set of indicators that measure the concepts described within the final conceptual framework for measuring the quality and safety of nursing care has been identified. This indicator set is presented in Appendix 14. These indicators collect data on seventy-eight of the 105 concepts (103 concepts identified in Phase 2 of the research plus two additional concepts identified in the analysis of *other* data within Phase 3) included within the final version of the conceptual framework for measuring the quality and safety outcomes of nursing care. This equates to approximately 75% of the concepts identified by nurses as important for measuring nursing practice. Many concepts are measured by more than one measurement tool or indicator and this cross-validation adds to the robustness of the data set. This is represented visually in Figure 6.21.

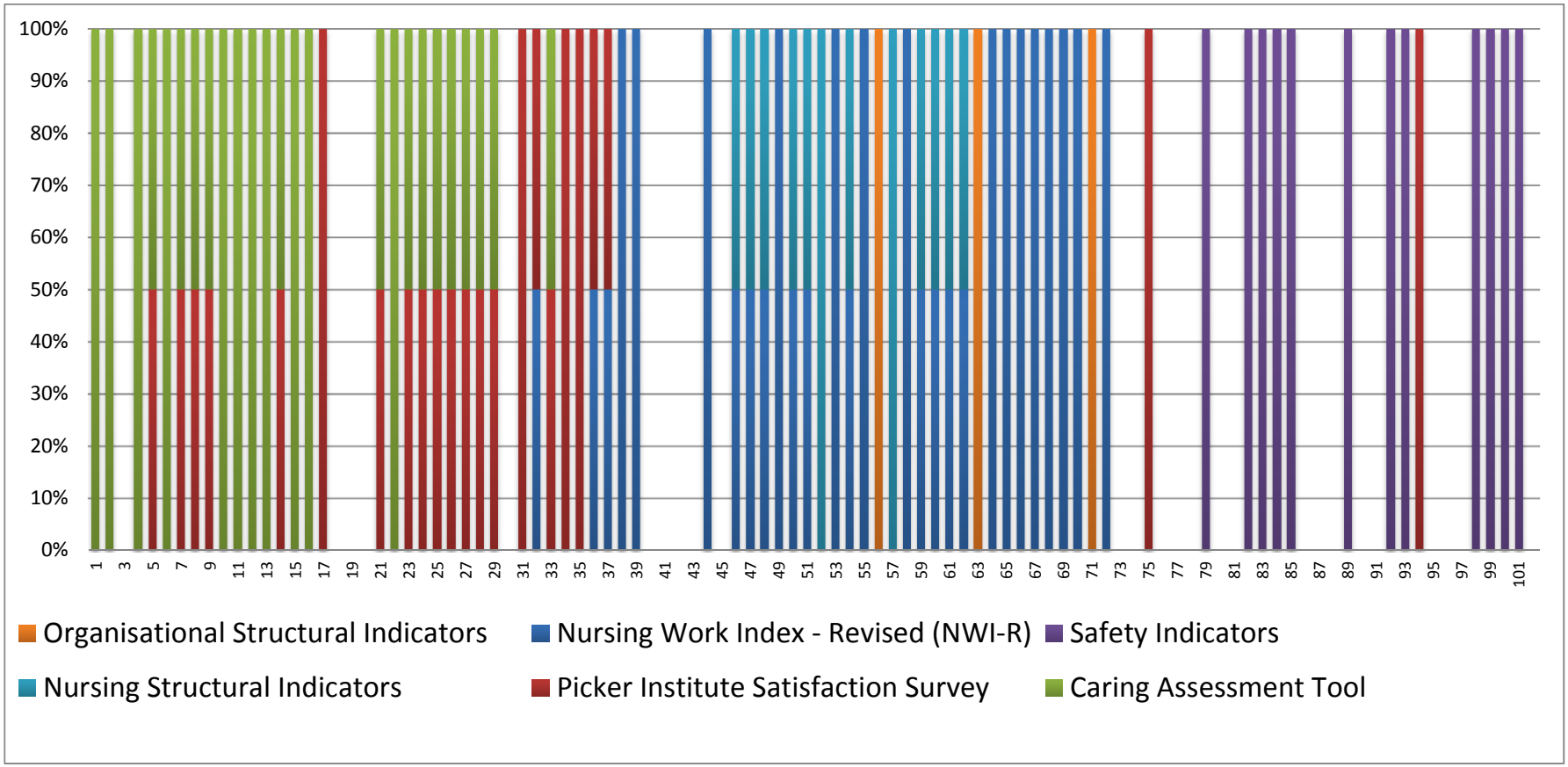

Figure 6.21: Visual illustration of concepts and measurement tools included in the indicator set from the conceptual framework for measuring the quality and safety outcomes of nursing care

The indicator set will be tested in future research and will be able to be collected using:

Abstraction of data from HR systems (staffing hours, skill mix and turnover)

Abstraction of data from hospital / organisation data (hospital size and characteristics)

Twice yearly or annual pressure ulcer prevalence survey

Twice yearly or annual observational study on medication administration

Twice yearly or annual observational study of hand hygiene using WHO 5 moments of hand hygiene tool

Ward or incident data on falls

Infection control data on Staphylococcus blood stream infections and central-line associated blood-stream infections

Annual survey of Nurses using NWI-R

Annual or periodic survey of patients using Picker Institute Patient Experience survey

Annual or periodic survey of patients experiences using Caring Assessment Tool

Collation of this data using these methods would enable a comprehensive set of data to be collected on the safety and quality of nursing care.

6.10 Procedures used to ensure rigour within Phase 3 of the research

In this phase of the research, qualitative data was collected from the published literature that examines the impact of nurses and nursing care on patient outcomes. This qualitative data was then collated and transformed into quantitative data to enable assessment of the most effective indicators and measurement methods for measuring nursing practice. Descriptive statistics and inference were then used to identify the most effective indicators and measurement methods for measuring nursing practice. To ensure a comprehensive discussion of the methodological rigour of this project, a discussion of the procedures used in both the quantitative components and the qualitative components of the study will be undertaken. This discussion uses the framework described in section 3.6 and begins with a discussion of qualitative data and the concept of trustworthiness.

6.10.1 Qualitative data and the concept of trustworthiness

The concept of trustworthiness was used to ensure rigour within this phase of the research project (Lincoln & Guba 1985). To ensure rigour within the research process, the concepts of credibility, dependability, confirmability and transferability were considered (Lincoln & Guba 1985). The following discussion explains how this research addressed these concepts using the framework described in section 3.6.2.

6.10.1.1 Credibility

Strategies to ensure credibility were built into this research during research design, data collection, data analysis and during interpretation of the findings. Table 6.22 has been used to present how the six specific processes for assuring credibility (as identified by Lincoln and Guba 1996) were incorporated into this project.

Table 6.22: Processes for assuring credibility in Phase 3 of this research project

Processes for assuring credibility (Guba and Lincoln 1985; Guba and Lincoln 1996)	**In this research ….**
Prolonged engagement	This phase of the research involved prolonged engagement by the researcher with the literature and the topic being examined. No participants were involved in this phase of the research.
Persistent observation	Persistent observation was undertaken as seen by the timeframe involved in data collection (approximately 18 months). This enabled context to be understood and the most important factors involved in measuring nursing care to be identified.
Triangulation	Qualitative data was obtained from the literature during this phase of the research. No other data source was used. Data was interpreted through the *a priori* coding template that was developed from data collected in Phase 2 of this research. Investigator triangulation was used to cross-check data accuracy, coding and interpretation of findings. This function was completed by the research supervisors.
Peer debriefing	As part of research supervision peer debriefing was used to discuss decisions and actions about design, data collection and analysis and interpretations of findings. In addition, presentation of initial and interim progress reports and presentations at conferences were used to gain feedback on research design, data collection, data analysis and interpretation of findings
Negative case-analysis	Collection of data within the *other* category was used to assess alternative or disconfirming views present within the literature. This process was used to ensure that the *a priori* coding template and the conceptual framework that it was developed from could be evaluated and any gaps or omissions identified.
Member checking	Member checking was not possible within this phase of the research process.

6.10.1.2 Dependability

Dependability requires the researcher to provide enough details about the procedures used in the study that it could be replicated by another researcher (Lincoln & Guba 1985). The description of the research process within this thesis provides evidence of this approach.

In addition, this research has used audit trials to record, describe and justify decisions made in planning the research, developing the coding template, collecting and collating

the data and then analysing the data. These decision trails have been described in the thesis and aim to ensure that the researcher is overt in describing decisions and reflexive in their role as researcher. The research supervision process has supported these decision trails throughout the project.

6.10.1.3 Confirmability

Confirmability relates to the ability of the researcher to objectively identify findings from the experiences and ideas of participants (Lincoln & Guba 1985; Shenton 2004). In this phase of the research this refers to the data source which was the published literature on measuring nursing practice. In addition, the researcher should provide a description of the researcher's ontological, epistemological and methodological beliefs and use of reflexivity in discussing the research and their role within it. Section 3.2 provided an overview of the researcher's world view and reflective commentary has been used in presenting the findings of the research.

6.10.1.4 Transferability

Transferability involves the use of *thick description* so that the reader can assess the transferability of new knowledge from the research (Lincoln & Guba 1985). In writing up the findings of this research, thick and contextualised description has been used to illustrate the steps involved in collecting, collating and then analysing the data.

6.10.2 Quantitative data and the concept of validity

The analysis of the quantitative data that was collected in the template analysis incorporated a number of approaches to enhance validity. It is important to note that, in this phase of the research, no participants were used and no instrument was used to collect data. As a result these terms do not apply in the usual way. Despite this, the concepts of internal validity, external validity and reliability are presented.

6.10.2.1 Internal Validity

Internal validity refers to the confidence we have in the accuracy of the results of a study (Keeney, Hasson & McKenna 2011). It is usually discussed in terms of content validity, criterion-related validity and construct validity.

Content validity was enhanced within the research process through the use of a template to collect data and the fact that this template was developed using data from Phase 2 of the research process. Content validity was further enhanced through concurrent collection and subsequent analysis of data coded into the *other* category. This ensured that gaps or omissions within the template (and the conceptual framework on which it was based) were identified as part of the research process.

Criterion related validity was not applicable to this research. Construct validity was enhanced through using strict search criteria to gather data from relevant publications within peer reviewed journals. The use of inclusion and exclusion criteria of the published literature on the topic to identify source documents enhanced the ability of this research to measure the construct being examined.

6.10.2.2 External validity

External validity is concerned with the applicability of the results in other settings or with other subjects (Zohrabi 2013). This research has a high level of external validity in that if another person conducted a template analysis on the literature using the *a priori* coding template, the same results could be achieved.

6.10.2.3 Reliability

Within this phase of the research, the concept of reliability relates predominately to the processes used to code concepts and whether this was done reliably. To enhance reliability in coding the following procedures were adopted (Riffe, Lacy & Fico 2005):

- Data was coded using the *a priori* coding template (which was derived empirically from research in Phase 1 and Phase 2 of this research project).

- All data was coded by the researcher (this eliminated the issue of training coders and inter-rater reliability).
- Supervisors assessed coded data at regular intervals including sampling of coding and revision of coding decisions. These processes assessed consistency in application of the a priori coding template, consistency in coding decisions and enhanced reflexivity by the researcher to minimise researcher bias.

6.11 Summary

Phase 3 of this research project has expanded upon the findings from previous phases of the project. It has identified a list of indicators (and measurement methods) for measuring the concepts identified within the conceptual framework for measuring the quality and safety outcomes of nursing practice. In addition, this phase of the project has sought to identify any other concepts that were not included in the aforementioned conceptual framework. These other concepts were evaluated and a small number of additional concepts were included. Data collection and analysis within this phase of the research project has enabled the final conceptual framework to be developed and presented.

An indicator set for measuring the quality and safety outcomes of nursing care has also been developed. The indicator set measures concepts from all of the key elements included within the conceptual framework for measuring the quality and safety outcomes of nursing practice. It includes the constructs: Care and Caring; Communication; Coordination and Collaboration; Safety; Patient Characteristics; Organisational Environment; and the Nurses Work Environment.

The next chapter discusses and synthesises the findings from the research project and presents an overview of the research and a discussion of the significance and limitations of this research project. Suggestions for future research are then presented.

CHAPTER 7: DISCUSSION AND CONCLUSION

7.1 Introduction

The purpose of this study was to explore how nursing's unique contribution to patient outcomes could be reasonably and accurately measured. The aims of the research were: to develop a conceptual framework that describes nursing outcomes from a holistic perspective; and to identify a set of indicators that could be used to measure the quality and safety of nursing practice from the perspective of the person receiving nursing care. This research has achieved both of its aims.

Even from inception this research project has been ambitious. The measurement of nursing care is discussed frequently within the nursing literature. In fact there is a prolific amount of literature on nursing-sensitive patient outcomes and nursing-sensitive patient indicators. However, there is only limited discussion about the measurement of patient outcomes attributable to nurses or nursing care from a holistic perspective. As discussed in Chapter 4 most of the research on this topic examines patient safety outcomes as the focus. In addition, most of the conceptual frameworks and indicator sets that examine the outcomes of nursing practice also focus upon patient safety outcomes or nursing outcomes (or sometimes a combination of both). As a result, this research aimed to address a significant gap in the literature and in practice, by developing a conceptual framework and indicator set that examines patient outcomes that are attributable to nurses and nursing care in a comprehensive and holistic way.

The initial review of the literature (described in Chapter 2) provided the context for this research. The first part of the literature review broadly examined the concept of patient outcomes and the theoretical approaches to measuring patient outcomes. The second part of the literature review provided an historical overview of the scholarly approaches that have been used to examine nursing-sensitive outcomes. The third and final part of the literature review narrowed the focus of the enquiry to explore the contemporary research on measuring nursing-sensitive patient outcomes in the ten year period up to 2011. This was achieved by undertaking an integrative review of all published literature

that identified and analysed the indicators and outcomes that had been used to evaluate the impact nursing care has on patient outcomes.

In the empirical part of this study a multi-phase, mixed methods research project was undertaken. The methodology of the research was described in Chapter 3 with the study design for each phase of the research explored within the chapter related to that phase of the research. A visual illustration of the phases of the project is presented in Figure 3.1.

This chapter synthesises the findings from the three phases of the research with specific focus on the outputs of this research: a conceptual framework for measuring the quality and safety outcomes of nursing care; and an indicator set for measuring the quality and safety outcomes of nursing care. This chapter is organised in four parts and includes a conclusion as the final part.

In the first part the conceptual framework for measuring the quality and safety outcomes of nursing care is presented. The discussion in this part focuses upon exploring and interpreting the conceptual framework in the context of the existing knowledge on this topic (presented in Chapter 2) and also with other relevant national and international literature.

The second part of the chapter presents the indicator set for measuring the quality and safety outcomes of nursing care. The discussion in this part focuses upon exploring and interpreting the indicator set in the context of the existing knowledge on this topic (presented in Chapter 2) and also with other relevant national and international literature.

The third part of the chapter explores and explains important findings from within the research project that provide key learnings on measuring nursing's contribution to patient outcomes, which have not been explicitly covered in the previous discussion sections. Many of these important findings were not anticipated when commencing the project; however their identification and discussion brings to light new knowledge as well as adding to what is already known on this topic and for that reason have been included in this discussion.

The fourth and final part of the chapter is the conclusion to the overall project. It includes an overview of the research and discussion of the significance and limitations of the research undertaken. Suggestions for future research are then presented.

7.2 The conceptual framework for measuring the quality and safety outcomes of nursing care

One of the outcomes of this research has been the development of a conceptual framework for measuring the quality and safety outcomes of nursing care. It does not attempt to depict nursing, organisational or societal outcomes that occur as a result of nursing care.

The development of this conceptual framework has been an iterative process and illustrations that depict this iterative development have been produced at the conclusion of each phase of the research project (please refer to Figures 4.4, 5.10, and 6.20). Data from each phase of the research has contributed to its development and conceptualisation.

The final representation of the conceptual framework for measuring the quality and safety outcomes of nursing care was presented in Figure 6.20 in Chapter 6 and has been reproduced as Figure 7.1 (on the following page). The framework is a visual illustration of the key elements (or categories) that could be collected to measure the quality and safety outcomes of nursing practice in a comprehensive way. In keeping with Newman's (1979) definition of a conceptual framework, it presents a matrix of concepts that together provides a focus for inquiry; in this case, 'into measuring nursing practice'.

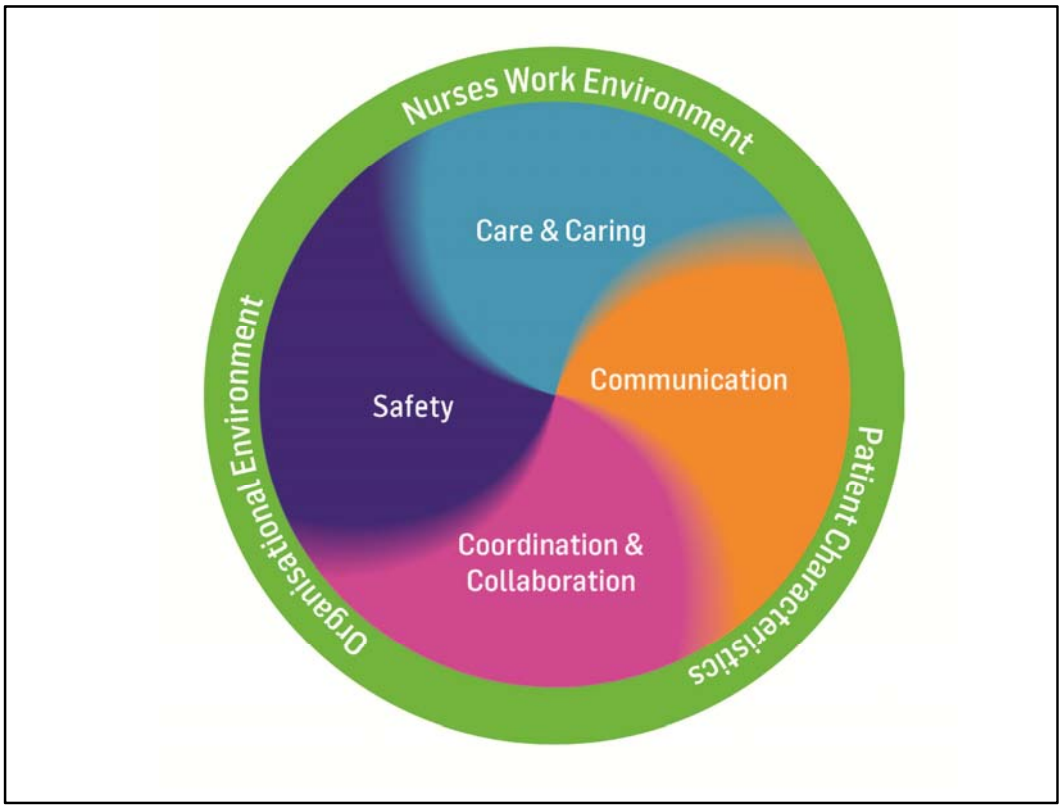

Figure 7.1: The conceptual framework for measuring the quality and safety outcomes of nursing care, developed in this study.

The key elements included within the conceptual framework are: Care and Caring; Communication; Coordination and Collaboration; Safety; Patient Characteristics; Organisational Environment; and the Nurses Work Environment. These key elements were identified in Phase 1 and Phase 2 of the research. The conceptual framework has been generated to depict the centrality of the elements of Care and Caring; Communication; Coordination and Collaboration; and Safety; to the measurement of quality and safety in nursing care. In the diagram, each of these concepts is depicted with blurry edges to represent the fact that separating nursing care into distinct categories is complex and that many of these key elements overlap with each other. The key elements of *Care and Caring*, *Communication*, *Coordination and Collaboration*, and *Safety* can be evaluated through the collection of indicators that examine the processes and outcomes of nursing care.

The key elements of *Patient Characteristics*, *Organisational Environment* and the *Nurses Work Environment* are represented as being external to the central elements of the framework. Their influence however, is considered all-encompassing and they affect the processes and outcomes of nursing care in all of the central elements. These external elements of the conceptual framework can be evaluated through the collection of indicators that examine the structural components of care (although some process measures are also evident within measures that examine the Nurses Work Environment).

7.2.1 Exploration of the key elements within the conceptual framework

Each of the key elements within the conceptual framework will now be explored. The purpose of this discussion is to illustrate the meaning of each of these elements, and to compare them with the existing knowledge on this topic.

7.2.1.1 Care and Caring

The construct of Care and Caring encompasses the delivery of nursing care and includes concepts that explore: self-care; functional improvement; quality of life; and reduction or relief from symptoms. It also contains concepts related to whether care is individualised and person-centred. The construct includes the presence of caring attitudes or actions and patient perceptions of feeling 'cared for'. Patient perceptions and / or patient satisfaction with nursing care are also contained within this construct. This includes global satisfaction with nursing care as well as patient perceptions and / or satisfaction with pain management; education provided to patients; and support provided to family / next of kin. The construct of Care and Caring also includes family satisfaction with care.

The key elements of this construct are inclusive of the provision of nursing care and the presence of caring in those interactions. These concepts were first identified in Phase 1 of this research and can be seen in the following quote from Participant 4 in the Consumer Group Interviews, when they were describing the important elements of nursing care:

> *…the ability to assess what a patient needs, so that is: relieve pain and other symptoms; give comfort; provide a safe environment; and promote healing [pause] the ability to anticipate the needs and requirements of that patient [pause] organisational skills [pause] social skills [pause] a genuine desire to give basic nursing care to people in hospital [pause] communication skills. (Participant 4, Consumer Group Interviews).*

Participant 73 in the Round 3 modified Delphi survey also provided data that demonstrated the duality of Care and Caring as a concept, describing the key element of Care and Caring as:

> *Care identifies the hands on /doing work. Caring is an inherent quality that is hard to measure. It may not be felt by the patient but may still be expressed by the nurse. Not necessarily verbally or physically tangible but internally/emotive. (Participant 73, Round 3 modified Delphi survey)*

The findings of this research are in keeping with other literature that examines nursing care. Palese and colleagues (2013) undertook a grounded theory study to identify a conceptual description of nursing care in Italy and the relationship between nursing care and patient outcomes. In their study, the nurses who were interviewed used the word *care* to describe all components of the general nursing care given to patients (Palese et al. 2013). This appears to be a common perception and is supported by the categorisation of concepts into the Care and Caring construct by participants in the Round 3 modified Delphi survey in Phase 2 of this research.

This categorisation also supports Watson's Theory of Human Caring where caring is viewed as "the foundational ontological substance of nursing" (Watson 1990, p. 21). Despite the central role caring plays in nursing care, the absence of consensus on what it means and how it can be measured added to the complexity of developing indicators

and outcome measures of care and caring in this research. Because of the dichotomy between how patients perceive caring and the views of nurses on caring, an approach that incorporates technical caring skills and professional knowledge, as well as the emotional and relational aspects of caring have both been incorporated into this construct (Canzan et al. 2014).

7.2.1.2 Communication

The construct of Communication focuses on communication processes and includes documentation of nursing assessment and nursing care within the healthcare records and patient perceptions and / or satisfaction related to communication with nurses. Patient perceptions include a wide range of concepts related to communication including the: perception of being involved in decision making; perception of 'being informed' about care; perception of 'being heard'; and perception of being able to trust the nurses. Patient satisfaction included a global rating of satisfaction with communication by the patient and their family / next of kin. This construct also includes patient satisfaction with: management of incidents and / or complaints; and cultural awareness of nursing staff.

Effective communication is a fundamental component of nursing care that is vital in ensuring high quality, safe patient care (McGilton et al. 2006). In this research, participants in the consumer group interviews within Phase 1 of the project identified the importance of communication and trust. The quote from Participant 5 describes the relational components of communication and highlights the need to develop a therapeutic relationship and individualise communication to each patient:

> *Nurses need to relate to me in a way that I am comfortable with, joke with me, get to know me, ask me about my life – they are forming a temporary relationship, not a substitute but like a substitute, for what you are missing out on at home (Participant 5, Consumer Group Interviews)*

This is in keeping with a person-centred approach to care using the processes espoused by McCormack and McCance (2006) in the framework for person-centred nursing, which include: working with patients' beliefs and values, engagement, having sympathetic presence and sharing decision-making. All of these processes require a focus on communication between nurses and patients during nursing care.

The inclusion of a key element focused upon communication also recognises the fundamental role that communication has in patient safety. Numerous reports into deficits within the healthcare system in a range of countries, over many years, have identified the pivotal role of communication in preventing or eliminating error (Garling 2008; The Mid Staffordshire NHS Foundation Trust Public Inquiry 2013; Institute of Medicine 2001; Brock et al. 2013).

7.2.1.3 Coordination and Collaboration

The construct of Coordination and Collaboration includes the presence of teamwork, collaboration, coordination of care and discharge outcomes. It aims to encapsulate the role of the nurse to collaborate with other members of the team and in the absence of other members of the team during after-hours periods, coordinate care and provide feedback on the patient and their progress. This key element includes a wide variety of concepts including: the presence of teamwork; continuity of care; communication processes within the unit (including handover procedures); relationships within nursing teams; constructive relationships with other healthcare professionals; timely and successful referrals to other members of the healthcare team; and presence of collaboration between healthcare team members. It also includes patient perceptions of: their readiness for discharge; education about the discharge process; and successful discharge.

Working as part of a team is an essential component of the modern healthcare system. Nurses are present within the acute care system for 24 hours a day, 7 days a week. When a person is hospitalised, nurses inevitably become involved in their care. Nurses have a unique role to play in the functioning of teams and the success of team interventions in improving patient outcomes. Nursing unit teams have been found to

influence nursing-sensitive patient outcomes in the important areas of quality of care and patient safety (Van Bogaert et al. 2014). Nurses collaborate with physicians, interact with allied health personnel, supervise assistant personnel, and coordinate care among a variety of disparate healthcare professions (Apker et al. 2006; Miller & Apker 2002).

As a result of this focus on teamwork, a construct that explores coordination and collaboration was seen to be important within the conceptual framework for measuring the quality and safety outcomes of nursing practice. This was evident in the following quote from Participant 1 within the Consumer Group Interviews which highlights the importance of team work in the context of a person-centred approach to care.

> *Good communication, professionalism, everyone aware of what is going on. When you are part of the team, it is all working well (Participant 1).*

7.2.1.4 Safety

The construct of Safety encompasses a broad range of patient safety concepts and includes indicators that examine: processes of care; outcomes of care; and patient perceptions related to safety. It also includes indicators that examine the period of time that a person has been hospitalised. Wherever feasible, patient safety concepts have been proposed that include both processes of care and outcomes of care. This enables the direct impact of nursing actions to be measured in the selected patient outcomes and facilitates the ability for nurses to evaluate and act on any data they collect to examine their practice.

The concepts included in the construct of Safety include: medication safety (including processes related to safe administration of medications); falls and falls with injury (including utilisation of risk management strategies and falls prevention strategies); pressure ulcers and hospital acquired pressure ulcers (including pressure ulcer prevalence and utilisation of pressure ulcer prevention strategies); hospital acquired

infections, central line associated infections and peripheral intravenous line infections (including hand hygiene practices); incidence of delirium since admission; incidence of self-harm since admission; failure to rescue; number of clinical incidents / near misses; and mortality. Length of hospital stay and unplanned admissions have also been identified as safety concepts to be examined. In addition, the presence of a safety culture has been included within this construct, as well as patients' perception of whether a patient 'feels safe' and whether care is appropriate / best practice.

Patient safety is of paramount importance when providing nursing care. Much of the existing literature that examines nursing-sensitive patient indicators and nursing-sensitive patient outcomes primarily examines concepts related to patient safety. The concepts included in this construct are broader than those proposed by most other researchers. The inclusion of data from patients' perceptions of care and the use of processes of care to support the outcomes being measured makes the approach proposed in this conceptual framework unique.

7.2.1.5 Patient Characteristics

The construct of Patient Characteristics includes concepts that examine patients': pre-admission functioning; pre-admission quality of life; cognitive status; willingness to be involved in their care; and their expectation(s) of the healthcare intervention that they are receiving. This construct also includes the family / next of kin involvement in care.

The use of these concepts was considered important to ensure that a person-centred approach to care was applied and considered as part of the evaluation of the quality and safety of nursing care. This construct did not use age, culture, or type of hospital presentation (for example, emergency or elective admission) as concepts because participants in the modified Delphi survey discounted these items as being important in measuring the quality and safety outcomes of nursing practice.

7.2.1.6 Organisational Environment

The construct of Organisational Environment includes: the type of organisation; teaching hospital status; organisational culture; management support; management experience and / or qualifications; model of care in use; and the organisational commitment to providing best practice, using evidence-based practice, and using person-centred approaches to care.

This construct has a broader and more comprehensive focus than has been seen in other published conceptual frameworks that examine the outcomes of nursing practice. This can be attributed to the constructivist approach used in the modified Delphi survey to build knowledge and understanding on the concepts being examined. As a result of this approach, participants were encouraged to provide feedback on all concepts that they thought were important in measuring the quality and safety outcomes of nursing care. All concepts were then presented to participants in subsequent rounds of the survey so that consensus opinions were reached. As a result of this approach, a broad approach to measuring nursing practice emerged. This is particularly evident in the constructs of Organisational Environment and Nurses Work Environment.

7.2.1.7 Nurses Work Environment

The construct of Nurses Work Environment includes concepts related to: workload; utilisation of nursing staff; the characteristics of the nursing staff; leadership within the nursing unit; the nursing culture; and the services available to support nurses in the unit in which they work. The use of both structure and process measures within this construct aims to ensure that broad data is available to support decision making about the nurses work environment.

Nursing unit teams and the environments in which they work have a significant impact on achieving positive patient outcomes, promoting high quality care and in advocating for patient safety (Van Bogaert et al. 2014; Duffield et al. 2007). Examination of the nurses' working environment and the characteristics of the nurses working within the unit are necessary to be able to interpret variations in patient outcomes. This is evident in the majority of conceptual frameworks that examine the outcomes of nursing

practice. This conceptual framework has taken a broader approach to the construct than is seen in most other published frameworks. This could be attributed to the fact that data was collected from frontline nursing staff working in clinical practice (using a constructivist paradigm) as part of the Round 1 modified Delphi survey. At the time this research was undertaken, there were no other conceptual frameworks that had collected concepts from frontline clinical staff engaged in nursing practice identified in the literature. Consequently, the construct of Nurses Work Environment is broader than other published frameworks that examine the impact of nursing care on patient outcomes.

7.2.2 Characteristics of the conceptual framework for measuring the quality and safety outcomes of nursing practice

One of the primary aims of this research was to identify / develop a conceptual framework that describes nursing outcomes from a holistic perspective. Once it became apparent that there was no published conceptual framework that achieved this aim, a multi-phase, mixed methods research projects was developed to enable the researcher to develop such a framework.

The characteristics of the conceptual framework that has been developed are that it has a holistic focus on the actions of nurses and it is person-centred in its approach to measuring nursing care. It explicitly explores indicators and outcomes that examine the quality and the safety of nursing care and is structured using Donabedian's (1966) quality framework that incorporates structure, process and outcome measures.

7.2.3 Comparisons and contrasts: an examination of other published conceptual frameworks that measure the outcomes of nursing practice

There are a number of conceptual frameworks that examine the outcomes of nursing practice. Many of these have been discussed within the literature review that was presented in Chapter 2 or in Phase 1 of the research (Chapter 4) where an analysis of published conceptual frameworks was undertaken. Most of the published conceptual frameworks on this topic have a primary focus on either safety outcomes or nurse staffing.

A small number of conceptual frameworks have a broad focus on the quality and safety of nursing practice from the perspective of the person receiving nursing care. The most notable of these are: the Quality Health Outcomes Model (Mitchell, Ferketich & Jennings 1998); the Nursing Role Effectiveness Model (Doran et al. 2006a); the ANA Nursing Report Card (Jones et al. 1997); the AHRQ Nurse staffing and quality of patient care (Hughes 2008); the Outcomes assessment tool for acute care (Cranley & Doran 2004); and the Nurse staffing, quality of care and outcomes conceptual framework (Clarke & Donaldson 2008).

The conceptual framework developed within this project differs from previous approaches because of the following key differences. Firstly, this conceptual framework categorises nursing care into constructs that describe the actions of nurses that relate directly to the work that nurses undertake within their clinical practice environments. Examination of these constructs enables conceptualisation and measurement of the work nurses do. Secondly, this conceptual framework has used a person-centred lens to develop and conceptualise the framework. This means that it seeks to examine indicators and outcomes that relate to the person receiving nursing care. Thirdly, the conceptual framework uses language that the recipients of nursing care can understand and interpret. This was a deliberate decision to ensure that the nomenclature used to describe nursing could be understood by the recipients of nursing care, the healthcare team, all nurses and the general public. Finally, this conceptual framework explicitly uses structure, process and outcome measures to ensure that the link between nurses and what nurses do can be made with the outcomes that they achieve. This is evident in the inclusion of process measures for most key outcome measures included within the conceptual framework. All of these key differences contribute to the development of a conceptual framework that enables both the quality and the safety outcomes of nursing care to be examined.

7.2.4 Implications for practice

The conceptual framework informing the measurement of the quality and safety outcomes of nursing practice has the potential to impact on the way individual nurses,

units, hospitals, and healthcare organisations measure the impact that nursing care has on patient outcomes.

It is envisaged that the conceptual framework could be used by an individual nurse, a unit or ward, a hospital or a healthcare system to collect data about nursing care. If the person or people using this conceptual framework collected data from all of the categories in the conceptual framework then the structure, process and outcome measures of the quality and safety of nursing care could be holistically examined. This could assist an individual nurse to examine the outcomes of their practice or be used at a unit or organisational level to evaluate and potentially improve the outcomes of nursing care. It could also be used to establish baseline data, allowing for the evaluation of innovations in treatment, modifications in skills mix, or new models of care.

It is envisaged that the conceptual framework could be used as a decision making tool for the collection and measurement of nursing data. The indicator set that has been proposed as part of this research project collects data from all of the categories within the conceptual framework and is discussed in the following section.

7.3 The indicator set for measuring the quality and safety outcomes of nursing care

The development of an indicator set for measuring the quality and safety outcomes of nursing care is the culmination of a multi-phase, mixed methods research study that had two primary aims: to develop a conceptual framework that describes nursing-sensitive patient outcomes from a holistic perspective; and to identify a set of indicators that could be used to measure the quality and safety of nursing practice, including from the perspective of the person receiving nursing care.

The proposed indicator set for measuring the quality and safety outcomes of nursing practice, has been developed to measure the concepts identified in the conceptual framework. Concepts for inclusion in the indicator set were conceptualised via an iterative process with data from each phase of the research contributing to the development of the conceptual framework. It was not until Phase 3 of the project, that

potential indicators were identified and evaluated (please see Chapter 6 for additional information). The final indicator set was discussed in Chapter 6 and is presented in Appendix 14.

7.3.1 Discussion of the indicator set

The indicator set measures concepts from all of the key elements included within the conceptual framework for measuring the quality and safety outcomes of nursing practice. It includes the constructs: Care and Caring; Communication; Coordination and Collaboration; Safety; Patient Characteristics; Organisational Environment; and the Nurses Work Environment.

The indicator set collects structure, process and outcome measures which would need to be collected from a variety of sources. It includes administrative data on structural measures, observational data on specified process measures and data from periodic administration of three surveys (the Nursing Work Index – Revised; the Caring Assessment Tool; and the Picker Institute Patient Satisfaction Survey). The indicator set collects data on seventy-five concepts from the conceptual framework using ninety-nine indicators (with some concepts being measured by more than one indicator). Testing of the feasibility of collecting the data set will commence as post-doctoral research.

The approach used in designing this indicator set has been supported by commentary from other nurse researchers. Wilson and colleagues (2012) for example, identified a list of potential indicators for measuring quality in paediatric hospitals in Australia. At the conclusion of their project they identified some limitations to their research. This included not using consumers to identify potential indicators and not exploring domains of care so that a comprehensive approach to measuring quality in all aspects of nursing care was achieved (Wilson et al. 2012). Both of these limitations have been considered within this research project and have been overcome.

A recent report from the National Nursing Research Unit at King’s College London also identified the need to link more closely nursing quality measurement to patient experiences of care and suggested that patient experiences of dignity, respect,

involvement in decision making and information provided to them about their treatment, should also be examined (Maben et al. 2012). This focus on including patient experiences within attempts to examine the effectiveness of nursing care is new. Existing indicator sets have not yet adopted this approach.

The indicator set developed within this project embraces the concept of person-centredness as a foundational element of high quality, safe nursing care. This focus on person-centredness is in keeping with recommendations from a number of organisations and individuals (for example, Australian Commission on Safety and Quality in Health Care 2010; Institute of Medicine 2001; Berwick 2008). Despite the recommendations of government bodies and learned colleagues, it is evident that the outcome measures that are currently used to examine the quality of care do not currently address the patient's perspective of the care that they receive (Ferguson et al. 2013). The Caring Assessment Tool developed by Duffy and colleagues (2014) can be used to overcome this problem. The Caring Assessment Tool uses Watson's Theory of Human Caring as the construct being examined and explores the "behaviours, skills, values, and attitudes used by nurses to respond to the needs of patients and families at a given moment in time" (Duffy, Brewer & Weaver 2014, p. 88). The inclusion of the Caring Assessment Tool in the indicator set identified by the present project enables a broad cross-section of concepts from within the categories of Care and Caring, Communication, and Coordination and Collaboration to be examined.

The comprehensive approach to measuring the quality and safety outcomes of nursing practice make the indicator set proposed within this research unique. The indicator set for measuring the quality and safety outcomes of nursing practice is now compared with other indicator sets that have been used to examine nursing practice.

7.3.2 Comparisons and contrasts: an examination of other indicator sets that measure the outcomes of nursing practice

There are a number of indicator sets that have been developed to gather data that examines the outcomes of nursing practice. Most of these indicator sets are based within the USA where data sets for measuring nursing practice have evolved over the last twenty five years. A number of the key indicator sets are examined in the following

discussion. The purpose of this discussion is to compare and contrast them with the indicator set that has been developed as part of this research project, which is presented in Appendix 14.

7.3.2.1 NDNQI

The National Database of Nursing Quality Indicators (NDNQI) is a national database for collection and reporting of nursing indicators in the USA. It was developed by the American Nurses Association (ANA) and has been collecting data on nursing indicators since 1998 (Montalvo 2007). The NDNQI collects and reports on structure, process and outcome indicators of nursing care at the unit level. It is used in acute care, paediatric, long-term care and mental health settings, over 2000 facilities in the USA contribute to it and data is also collected in 6 other countries (Press Ganey 2015). The indicators examined within the NDNQI are presented in Table 7.1.

The indicators examined within the NDNQI are valid and reliable measures of nursing practice. Many of them are included within the indicator set that has been developed within this project. It is relevant to note that some process measures are examined but there are no indicators that examine communication, caring or the role of the nurse in the healthcare team. There are also no indicators that explore nursing care from the perspective of the person receiving care.

Table 7.1: NDNQI Indicator set (American Nurses Association 2014)

NDNQI indicators	Type of indicator
Patient falls	Outcome
Patient falls with injury	Outcome
Pressure ulcers: Community acquired	Structural
Pressure ulcers: Hospital acquired	Outcome
Pressure ulcers: Unit acquired	Outcome
Skill mix	Structural
Nursing hours per patient day	Structural
RN Surveys: Job Satisfaction	Process
RN Survey: Practice Environment Scale	Process
RN Education and Certification	Structural
Paediatric pain assessment cycle	Process
Paediatric IV infiltration rate	Outcome
Psychiatric patient assault rate	Outcome
Restraints prevalence	Process
Nurse turnover	Process
Healthcare-associated infections: Ventilator-associated pneumonia (VAP)	Outcome
Healthcare-associated infections: Central line-associated blood stream infection (CLABSI)	Outcome
Healthcare-associated infections: Catheter-associated urinary tract infections (CAUTI)	Outcome

7.3.2.2 CALNOC

The Collaborative Alliance for Nursing Outcomes (CALNOC) was formerly known by the title of the 'Californian Nursing Outcomes Collaborative' and is based in the state of California in the USA. It includes structure, process and outcome measures that are collected at the unit level. Unit level data types include: adult acute care; paediatrics; post-acute care; acute rehabilitation; emergency department; child and maternal care (Collaborative Alliance for Nursing Outcomes (CALNOC) 2015). Hundreds of hospitals in over nine states within the USA contribute to CALNOC. The indicators examined within the CALNOC database are presented in Table 7.2.

The CALNOC dataset contains more indicators than the NDNQI dataset and has a stronger focus on the use of process measures to support nurses to identify issues in practice and then act upon them. The CALNOC dataset also contains specific indicators for emergency departments and midwifery.

Many of the indicators in the CALNOC dataset have also been included in the indicator set that has been developed in this project. This includes the use of risk assessment procedures and prevention protocols to support evaluation of patient falls and hospital acquired pressure ulcers. The methodology for medication administration accuracy safe practices has also been incorporated into the indicator set developed in this project. The most notable difference between the CALNOC dataset and the indicator set proposed in this research is the exclusion of patient experiences of care and indicators related to the process of delivering care, especially as they relate to communication, caring and the nurses role in the healthcare team.

Table 7.2: CALNOC Indicator set (Collaborative Alliance for Nursing Outcomes (CALNOC) 2015)

CALNOC indicators	Type of indicator
Hours of Nursing Care per Patient Days	Structural
Skill mix	Structural
Percent contracted hours	Structural
Ratios	Structural
Voluntary turnover	Structural
RN Characteristics – Education, Experience, Years of service	Structural
Unit rate of Admissions, Discharges and Transfers	Structural
Maternal / Child deliveries	Structural
Emergency Department encounters / boarders	Structural
Risk assessment for falls	Process
Risk assessment for hospital acquired pressure ulcers	Process
Protocol implementation for falls prevention	Process
Protocol implementation for pressure ulcer prevention	Process
Medication Administration Accuracy safe practices	Process
PICC Line insertion practices	Process
Emergency Department patient flow	Process
Hospital Acquired Pressure Ulcer (HAPU) by Stage	Outcome
Fall rate	Outcome
Injury Fall rate	Outcome
Restraint Prevalence rate	Outcome
Central Line-Associated Blood Stream Infections (CLABSI) in PICC lines	Outcome
Medication Error Rates	Outcome

7.3.2.3 MilNOD

The Military Nursing Outcomes database (MilNOD) was developed by Military nurse leaders to address the need for data to inform managerial and executive decision making within the Military Health System in the USA (Patrician et al. 2010). MilNOD adapted procedures used by CALNOC to develop their database with the most notable differences being that it collects shift level data on nurse staffing and has measures of patient satisfaction embedded within the dataset. Fifty-six units in thirteen Military Hospitals were involved in the collection of MilNOD data (Patrician et al. 2010). The indicators examined within the MilNOD database are presented in Table 7.3.

Table 7.3: MILNOD Indicator set (Patrician et al. 2010)

MilNOD indicators	Type of indicator
Nursing care hours (each shift)	Structural
Nursing staff mix (each shift)	Structural
Staff category (each shift)	Structural
Nursing staff education and experience	Structural
Pressure ulcer prevalence	Patient Outcome
Restraint use prevalence	Patient Outcome
Patient falls	Patient Outcome
Medication administration errors	Patient Outcome
Patient satisfaction with care	Patient Outcome
Patient satisfaction with planning for discharge	Patient Outcome
Patient satisfaction with pain management	Patient Outcome
Patient satisfaction with education	Patient Outcome
Nursing job satisfaction	Nursing Outcome
Nursing needle-stick injuries	Nursing Outcome
Nursing work environment	Contextual
Patient turnover	Explanatory
Patient acuity	Explanatory

The MilNOD indicator set includes data related to the patient's experience of care and in this way it has some similarities with the indicator set proposed in this research. Like the NDNQI and CALNOC datasets it does not explore communication, caring or the role of the nurse in the healthcare team.

7.3.2.4 HOBIC and C-HOBIC

The Health Outcomes for Better Information and Care project (HOBIC) was funded by the Ontario Ministry for Health in Canada. HOBIC involves the collection of outcomes data by nurses, occupational therapists, pharmacists and physical therapists in a variety of different settings (ICES 2015). HOBIC is different to other data sets in that it enables a central repository for data and uses information systems to enable clinicians to access that data to inform assessment at the point of care.

HOBIC measures have been developed for acute care, long-term care, complex-continuing care and home care (ICES 2015). They include assessment of: functional status / activities of daily living; symptom status; safety outcomes; and therapeutic self-care (ICES 2015). The HOBIC indicators for acute care are presented in table 7.4

The work of HOBIC has been expanded into C-HOBIC in other parts of Canada. C-HOBIC uses the same methodology as HOBIC and collects data in the same populations using the same assessments. The major difference between the two approaches is that C-HOBIC has incorporated the nomenclature of the International Classification of Nursing Practice (ICNP) and the Systematized Nomenclature of Medicine-Clinical Terms (SNOMED-CT) into its patient assessments and documentation at admission and discharge. It uses Electronic Health Records to record data and facilitates the use of this data for aggregation and analysis (C-HOBIC 2015).

The HOBIC and C-HOBIC indicators sets are very different from those previously presented. They focus upon the work nurses do and record indicators for each patient based upon the care they provide. There are some similarities with the indicator set proposed in this research in that all three indicator sets explore nursing care from a holistic perspective. HOBIC and C-HOBIC take a very clinical view of care and

examine clinical effectiveness. The indicator set developed in this project also examines caring, communication and the role of the nurse to coordinate care and collaborate with other members of the healthcare team.

Table 7.4: HOBIC indicators for acute care (ICES 2015)

HOBIC indicators for acute-care	Type of indicator
Eating	Functional status / Activities of daily living
Bathing	Functional status / Activities of daily living
Personal hygiene	Functional status / Activities of daily living
Walking	Functional status / Activities of daily living
Transfer to toilet	Functional status / Activities of daily living
Toilet use	Functional status / Activities of daily living
Bed mobility	Functional status / Activities of daily living
Bladder continence	Functional status / Activities of daily living
Pain	Symptom status
Fatigue	Symptom status
Dyspnoea	Symptom status
Nausea	Symptom status
Falls	Safety outcomes
Pressure Ulcers	Safety outcomes
Ability to manage medications	Therapeutic self-care / Readiness for discharge
Understanding their symptoms	Therapeutic self-care / Readiness for discharge
Understanding how to treat symptoms	Therapeutic self-care / Readiness for discharge
General ability to care for self	Therapeutic self-care / Readiness for discharge
Knowing who to contact for help	Therapeutic self-care / Readiness for discharge
Ability to handle or adjust activities of daily living	Therapeutic self-care / Readiness for discharge

7.3.2.5 RN4CAST

The RN4CAST study used a cross-sectional, multi-level design with data collected at the hospital, nursing unit, individual nurse and patient level via four different data sources in twelve European countries (Sermeus et al. 2011). The objective of the RN4CAST study was to determine how hospital nurse staffing, skill mix, educational composition, and quality of the nurse's work environment impact on hospital mortality, failure to rescue, quality of care, and patient satisfaction (RN4CAST 2009). The indicators used in the RN4CAST study have been modified from those used in the International Hospital Outcomes Study (Sermeus et al. 2011). A list of the RN4CAST indicators and their data source has been included in Table 7.5.

Table 7.5: RN4CAST Indicators and data source (Sermeus et al. 2011)

RN4CAST Indicators	Data Source
Nursing work environment	Nurse questionnaire (PES-NWI)
Nurse Burnout	Nurse questionnaire (Maslach Burnout Inventory)
Nurse Job Satisfaction	Nurse questionnaire
Nurse perceived quality of care	Nurse questionnaire
Nurse staffing levels	Nurse questionnaire
Nurse education	Nurse questionnaire
Nurse demographics	Nurse questionnaire
Risk-adjusted in-hospital mortality	Hospital discharge abstract databases
Failure to rescue	Hospital discharge abstract databases
Patient satisfaction	Patient survey (CAHPS)

The RN4CAST study is not a true indicator set in that it does not examine nursing-sensitive indicators over an extended period of time but rather uses a cross-sectional survey to take a snapshot of what is occurring at a given point in time. Given its scale and significance it has been included in this discussion because it could be used as an indicator set if repeated measures were collected over an extended period of time.

The indicators collected within the RN4CAST study are substantially different to those collected in all other indicator sets and in the indicator set proposed in this research. This could be attributed to the use of self-report data from nurses about staffing, patient numbers and perceptions of quality. The use of hospital discharge abstract databases to gather outcome data related to mortality and failure to rescue is also a different approach to what has been taken in all other indicator sets that have been explored.

7.3.2.6 Key Performance Indicators for Nursing and Midwifery care (McCance et al. 2011)

Using consensus methods a list of key performance indicators for Nursing and Midwifery were developed by McCance and colleagues (2011) in Northern Ireland. Following ranking of a broader list of key performance indicators the top ranked eight indicators were identified. The final list of indicators is focused primarily on fundamental aspects of nursing and midwifery care, such as communication and developing positive relationships (McCance et al. 2011). The key performance indicators for Nursing and Midwifery that were identified by McCance and colleagues (2011) are presented in Table 7.6.

Table 7.6: KPI's for Nursing and Midwifery (McCance et al. 2011)

Key performance indicators for Nursing and Midwifery
Consistent delivery of nursing/midwifery care against identified need
Patient's confidence in the knowledge and skills of the nurse/midwife
Patient's sense of safety whilst under the care of the nurse/midwife
Patient involvement in decisions made about their nursing/midwifery care
Time spent by nurses and midwives with the patient
Respect from the nurse/midwife for patient's preference and choice
Nurse/midwife's support for patients to care for themselves, where appropriate
Nurse/midwife's understanding of what is important to the patient

The KPI's for Nursing and Midwifery contrast with most other indicator sets that have been described in this discussion. This is due to the absence of traditional nursing-sensitive indicators that are examined in most other indicator sets, such as falls rates, pressure ulcers and medication errors. This list of key performance indicators includes items related to person-centred care and communication and also includes indicators related to the person's experience of care. This has similarities with some elements of the indicator set that has been developed as part of this research project.

Having discussed the indicator set for measuring the quality and safety outcomes of nursing practice and explored other indicators sets used in practice, it is important to now consider the implications that this new indicator set may have for practice.

7.3.3 Implications of this new indicator set for practice

The indicator set for measuring the quality and safety of nursing practice has been conceptualised and developed to identify how nursing's unique contribution to patient outcomes could be measured. The implications can be broadly divided into: the implications for patients (as the recipients of nursing care); the implications for nurses working within the healthcare system; the implications for management and governing bodies; and the implications for the nursing profession (more generally).

As patients are the recipients of nursing care, it is important to consider the implications of this indicator set on them. Ultimately it is envisaged that the collection of a comprehensive set of indicators for measuring the quality and safety outcomes of nursing care will result in improvements to patient outcomes. This claim is supported by research that identifies that when an organisation commits to collecting and reviewing nursing-sensitive indicators on an ongoing basis, the quality of care provided to patients improves (Brown et al. 2010; Kavanagh et al. 2012). In addition, the collection of the indicator set identified in this research would enable patients to contribute data and be an active participant in the measurement of the quality and safety of nursing care. This would occur through feedback on the patients' perceptions of care, patients' satisfaction with care and feedback about the communication and caring actions of nurses using the Caring Assessment Tool. The inclusion of patient experiences in this evaluation would

assist to accelerate the adoption of person-centred care and enable patients' experiences of their care to drive quality improvement.

The collection of a comprehensive set of indicators to measure the quality and safety outcomes of nursing practice would have a number of significant implications for nurses working within the healthcare system. The most significant of these would be the ability for nurses to measure what they do in a holistic and balanced way. This would enable nurses to use a common language that explores the outcomes of their nursing practice. The collection of a comprehensive set of indicators would also provide an opportunity for nurses to share good practice through benchmarking and facilitate learning when practice requires improvement. This would provide nurses with an opportunity to own the data about nursing practice and empower them to action any changes which might be required when the data was evaluated. The indicator set identified in this research project would facilitate this ownership due to the holistic, person-centred focus of data within the indicator set and collection of data (wherever possible) at the unit level. Collection of data at unit level facilitates ownership of the data by staff within that unit because the unit is the operational unit of the healthcare system where the microsystems of culture and clinical practice intertwine. The collection of data within the indicator set also enables nurses to understand and consider the role they play in the elements being measured within the indicator set. In this research this is partly due to the language used within the indicator set and the use of a conceptual framework to explore the role of nurses in providing patient care. This is in contrast to many other indicator sets that focus on a small number of safety items without explicitly linking them to the processes of nursing care or exploring the breadth of the role nurses have in improving patient outcomes.

The development of an indicator set for measuring the quality and safety outcomes of nursing practice could enable organisations to improve the quality and safety of care provided to patients. This could be achieved through improving organisation performance, saving money on avoidable events (such as adverse events and poor communication) and improving workplace culture. Use of an indicator set such as the one proposed in this research also enables funding bodies to compare organisations and reward the achievement of good patient outcomes. This can lead to improvements in an

organisation's standing and reputation and the opinion of shareholders and / or taxpayers. The identification of poor performance could also have significant implications on an organisation if quality and safety data is publicly reported. This may include reduced public confidence, poor utilisation of services and increased staff turnover and / or staff morale. When this occurs it could create a second tier of services with only those unable to attend other hospitals or healthcare services being cared for at organisations that do not perform at satisfactory levels. It is for this reason that implementation of indicator sets should be carefully staged and the full suite of structural indicators should be collected for all organisations. The use of structure, process and outcome data needs to be interpreted together to identify significant areas of improvement.

Lastly, the development of the indicator set for measuring the quality and safety outcomes of nursing practice will have significant implications for the nursing profession. The indicator set enables the knowledge of nursing to be captured through use of measurable data that can be evaluated and shared. Its adoption would enable nurses to develop a language that explores what they do and how they do it, and facilitate conversations that celebrate nursing knowledge and how it is used in clinical practice. The use of a common language to explore the outcomes of nursing practice may improve the culture of nursing and reduce nurse burnout by providing data on the positive contributions that nurses have on patient outcomes. It would enable nurses and nurse managers to have data to discuss with health service administrators and policy makers when others are seeking to implement changes in nurse staffing and / or nursing skill mix. Without this data there will continue to be pressure from health service administrators to dilute nursing skill mix with unskilled staff and change the focus of nursing roles without recognising the implications this may have on patient outcomes (Crookes 2009). The indicator set also creates a methodology for evaluating changes in the practice environment. This could include changes in nurse staffing, patient acuity, nursing work environment, the model of care, practice development initiatives, the physical layout of the ward or unit, and management practices on the unit. The collection of data from within the indicator set would provide the ability for nurses to evaluate these changes and to gather evidence to support practice change.

Davidson, Daly and Hill (2013) made comments in a recent editorial that focused on 'how nursing needs to look to the future'. They commented that:

> "An informed nursing voice with strong evidence is needed if communication with key stakeholders is to be effective in meeting the healthcare challenges of the future with common vision. Courage, commitment, competence and compassion, supported by nursing science and evidence-based practice, can provide nurses with opportunity and credibility to participate in making health care better for patients and their families". (Davidson, Daly & Hill 2013, p. 2666).

It is clear that the collection of data which reflects the key role(s) nursing plays in healthcare is one important way that nursing can achieve its full potential and take its part in the healthcare conversations that shape the future.

7.4 Other key findings from the research project

This part of the chapter explores and explains some important findings from within the research project that provide key learnings on measuring nursing's contribution to patient outcomes, but have not been explicitly discussed elsewhere in the thesis. Many of these important findings were not anticipated when commencing the project however their discussion brings to light new knowledge as well as adding to what is already known on this topic and for that reason they have been included in this discussion.

Within Phase 1 of the research, interviews with consumers were undertaken and during these interviews a number of important findings were uncovered. The first of these relate to the suggestion by participants that patient satisfaction with nursing care could be rated using average, best and worst ratings. This rating is a novel suggestion and it is not currently used in research or practice. However, it may provide really useful feedback at ward or unit level especially if patients had the opportunity to provide qualitative data to provide details of their experiences. The use of average in combination with best and worst ratings may assist in making patient reported outcomes more reliable and eliminate the way an average rating can be swayed by really good or

really poor experiences. This concept merits further consideration and could be evaluated in tools that measure patient satisfaction.

Participants in the consumer group interviews also explored the concept of ‘safety’ and what it meant to ‘feel safe’. It was evident from these discussions that the concept of safety was complex and it had different meanings to different participants. Understanding what it means to feel safe (from the perspective of patients) is thus an area that requires further study.

Participants in the expert nurse interviews in Phase 1 of this research also provided an unanticipated finding. In the process of conducting the interviews and in analysing and interpreting the findings, it became evident that there were diverse views amongst the nurse academics about the approaches that can be used to measure nursing-sensitive outcomes. A number of participants provided ideas on how a comprehensive set of indicators and outcomes should be developed that explore the broad spread of patient outcomes that are considered attributable to nurses and nursing care. A smaller group of participants provided information about how measuring nursing outcomes is focused only on the link between nurse staffing and patient outcomes that can be recorded in large administrative data sets. Once this dichotomy became apparent, it became obvious that it could also be seen in the literature on nursing-sensitive outcomes. These epistemological and ontological differences seem to characterise the literature; however, it is not clear if researchers who explore the topic of nursing-sensitive outcomes are truly reflexive about their own world view and the impact this has on the research they undertake. Some additional commentary on this by researchers might help to make this clear to those reading their research and help to illuminate these epistemological assumptions.

Within Phase 3 of the research, some other unanticipated findings emerged. These findings related to concepts in the conceptual framework that were either not present or infrequently examined within the published literature; but were clearly identified as important by this study. Two concepts were not examined at all within the literature. They were: family involvement in care; and incidence of self-harm post-admission. A number of additional concepts were only coded infrequently. The most noteworthy of

these were hand hygiene practices which was only identified once within the literature. Given the pivotal role of hand hygiene within infection control practices it is surprising that data related to this has not been published within research papers examining nursing indicators and nursing-sensitive outcomes. The use of hand hygiene practices as a process measure for outcomes related to healthcare-associated infections is not listed as an indicator in any of the indicator sets examined earlier in this chapter. The validation of an observational assessment of the 5 moments of hand hygiene audit tool as a process measure should be completed as a matter of priority so that structure, process and outcome measures are available to assist in interpreting data about the nurses' role in infection control. This important measure has been included in the indicator set developed within this research.

7.5 Conclusion

7.5.1 Overview of the research

This multi-phase, mixed methods research project has achieved its aim of developing a conceptual framework and proposing an indicator set for measuring the quality and safety outcomes of nursing care. The study sought the views of people who have been nursed and the views of nurses themselves to identify the important concepts for measuring nursing practice. It then used the published literature to identify how these important concepts had been used to evaluate nursing care previously. At the end of this research a conceptual framework and an indicator set for measuring the quality and safety outcomes of nursing care has been proposed.

7.5.2 Significance of the research

This research has conceptualised a difficult and complex problem. It has identified the important concepts in measuring nursing practice from the perspective of the people receiving nursing care and nurses delivering care. This construction of knowledge about the concepts for evaluating nursing care has enabled a conceptual framework for measuring the quality and safety outcomes of nursing care to be identified and conceptualised. This conceptual framework can now be used by individual nurses, units, hospitals and organisations to generate data they can use to evaluate nursing care from a

holistic perspective. Amongst other things, this will enable the diverse roles of nurses within the modern healthcare system to be evaluated. This holistic evaluation will enable the positive outcomes of nursing care to be evaluated, in contrast to most existing approaches to evaluating nursing care which typically measure the occurrence of adverse events because of poor nursing care.

The development of the conceptual framework has enabled an indicator set for measuring the quality and safety outcomes of nursing care to be identified. This indicator set uses valid and reliable indicators and measurement tools that have been used in research endeavours previously published on the topic. The indicators and measurement tools were identified using a template analysis of all the published literature that examined the research on nursing-sensitive indicators and nursing-sensitive outcomes. Data for the proposed indicator set is thus clearly able to be collected.

7.5.3 Limitations of the research

The researcher acknowledges that there have been some limitations affecting the findings of this research.

In Phase 1 of the research, there were a number of limitations related to sampling procedures. Within the consumer group interviews all participants responded to a promotional flyer and as a result were self-selected. This may have resulted in some degree of bias due to their desire and willingness to participate in the research. In addition only seven participants volunteered to be involved in the consumer group interviews. Within the expert nurse interviews, the participants were purposively sampled and a total of six people agreed to participate in the interviews.

Phase 2 of the research involved a purposeful sample of practicing nurses in public and private sector healthcare services in a region of New South Wales, Australia. In this phase of the research a modified Delphi survey was used to gain consensus agreement on the important concepts for measuring the quality and safety outcomes of nursing work. The use of consensus methods does not mean that the findings from the research

can be generalised to other populations, nor can we assess whether the participants were truly representative of all nurses working in this region or other regions in Australia or elsewhere. This may be considered to be a limitation of this research and should be considered when the translation of this research into other settings is being considered. It is important to note though, that the aim of this phase of the research was to build knowledge and understanding of the important concepts and the inclusion of a large number of participants aimed to overcome this limitation. Phase 3 of the research included procedures to overcome any potential influence of local factors through analysis of the published literature and included the review of *other* concepts as part of data collection and analysis.

In Phase 2 of the research, there was a gap of three months between the Round 2 and Round 3 modified Delphi surveys. This resulted in a small drop in participation within the Round 3 modified Delphi survey with 128 out of a potential 169 participants contributing to the survey. The maximum total number of 128 participants equates to a response rate of 76% from Round 2 and 65% from the total number of participants in Round 1. While this is adequate and of not of major concern, the timing of the surveys probably impacted on this participation rate and could be considered a limitation in Phase 2 of the research.

In Phase 3 of the research a broad literature search was conducted to ensure that the template analysis could assess the methods for measuring concepts from Phase 2 of the research. This literature search used overarching keywords such as “nurs* sensitive outcome*”, “nurs* sensitive indicator*” and (“patient outcomes” AND “nurs*”, AND “research”) to conduct a search for literature. While this was deemed to be the only feasible approach to conducting the template analysis additional searches related to the concepts of caring, communication, collaboration and safety may have identified additional articles that could have provided additional data for analysis and interpretation. This is seen as a possible limitation of this research but was not undertaken due to the feasibility of such a task.

The final limitation of this research is that it has not tested the feasibility of collecting all of the data within the indicator set as part of this project. This will commence as post-doctoral research and is discussed in the 'recommendations for future research'.

7.5.4 Recommendations for future research

Based on the results of this research several recommendations for future research can be made.

1. This study has identified a comprehensive list of indicators for measuring the quality and safety outcomes of nursing practice and the feasibility of collecting this data needs to be explored. The indicator set may need to be further refined based upon the results of such research.

2. Consideration needs to be given as to whether the conceptual framework for measuring the quality and safety outcomes of nursing work can be applied to a variety of different nursing environments. Focus groups with nurses from a variety of different nursing specialty areas and practice settings could be used to assess the utility of the conceptual framework and / or the indicator set. Testing of the conceptual framework and / or the indicator set could then be undertaken to validate and / or modify it for use in a variety of different settings (for example, aged care, mental health, community).

3. Development of a collaborative centre for coordinating the identification, collection, and dissemination of nursing-sensitive indicators and outcomes within Australia should be considered. If post-doctoral research validates the use of the indicator set developed within this research then it could be used as the foundation for collaborative research on this topic. Given that the CALNOC data set has been successfully replicated and contextualised (as seen in the MilNOD dataset) the use of an approach similar to that used by MilNOD in adapting and contextualising the CALNOC approach would be worth considering. The absence of a data repository for nursing-sensitive indicators in

Australia has significant limitations for the ongoing development of research on nursing-sensitive indicators in Australia.

4. Research to validate the use of hand hygiene and the '5 moments of hand hygiene observational assessment' as a process measure for infection control related nursing outcomes should be completed. The use of a validated process measure on hand hygiene would strengthen links between nursing structure and nursing outcome measures as they relate to assessment of nursing care in relation to infection control.

5. Further investigation into the concept of safety from the perspective of the person receiving nursing care should be conducted. Interviews in Phase 1 of this research identified that the concepts have multiple meanings and interpretation to patients receiving nursing care and further study to elucidate the full meaning of the concept of safety should be undertaken.

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APPENDIX 1: INTEGRATIVE REVIEW

Table A1: Evidence table

Author (year), country	Design	Conceptual framework / model	Data source	Sample, setting	Patient indicator(s); Patient outcome(s) measured	Summary of findings	Theme(s)
Apker et al. (2006), USA	Qualitative - grounded theory	Nil specified	Participant interviews	50 healthcare workers	Nil specified	4 communicative skill sets used by nurses: collaboration; credibility; compassion; and coordination.	Communication
Bae, Mark and Fried (2010), USA	Descriptive design (secondary data analysis)	Input-process-outcome (IPO) framework	Secondary data from Outcomes Research in Nursing Administration (ORNA II) project, (nurses and patients)	268 units; 141 hospitals	Patient satisfaction; average length of stay; patient falls; medication errors	Workgroup learning, workgroup cohesion and workgroup coordination are impacted by nursing turnover.	Perception; Safety outcomes; Clinical outcomes
Bae (2011), USA, Canada and Japan	Systematic review	Lake (2007), 7 domains of nursing practice environment	Secondary research (11 primary studies)	From primary studies	14 different patient outcome variables (30-day mortality; failure to rescue; patient satisfaction; ventilator-associated pneumonia; catheter-associated sepsis; medical errors; central line-associated bloodstream infections; catheter-associated urinary tract infections; nurse reports of adverse events; patient falls; medication errors; health status after discharge; length of stay; and near-miss errors)	Inconclusive relationship between positive working conditions (for nurses) and patient outcomes.	Safety outcomes; Clinical outcomes
Barkell, Killinger and Schultz (2002), USA	Retrospective, descriptive, comparison design	Nil stated	Patient surveys; medical record audit; incident data	1 unit; 59 patients and 37 patients	Length of stay; incidence of pneumonia; incidence of UTI; patient satisfaction; patient perception of pain; frequency of documentation of pain scores	Few significant differences between staffing models.	Clinical outcomes; Safety outcomes; Perception
Beck et al. (2010), USA	Instrument validation	Conceptual framework for	Participant interviews	39 patients; 3 hospitals	Pain; satisfaction with pain management	Validation of Pain Care Quality (Pain CQ) Survey.	Clinical outcomes;

Author (year), country	Design	Conceptual framework / model	Data source	Sample, setting	Patient indicator(s); Patient outcome(s) measured	Summary of findings	Theme(s)
		study design					Perception
Behrenbeck et al. (2005), USA	Case study	Nursing outcomes classification (NOC)	Patient records; patient interviews; nurse surveys	434 patients; 107 nurses; 1 hospital	66 of the potential 190 NOC outcomes	Inter-rater reliability of NOC outcomes used was high; lessons learned from implementation.	Clinical outcomes; Functional outcomes; Safety outcomes
Berney and Needleman (2006), USA	Cross sectional survey (Secondary analysis of administrative data)	Needleman's conceptual framework	Administrative datasets; hospital discharge abstracts	161 hospitals	Medical patients / surgical patients: UTI; Upper gastro-intestinal bleeding; pneumonia; shock and cardiac arrest; sepsis; failure to rescue; mortality.	Increased overtime leads to a reduction in mortality (for medical and surgical patients). No statistically significant differences for other outcomes.	Safety outcomes
Blegen et al. (2011), USA	Cross-sectional survey	Nil specified	Administrative datasets; hospital discharge diagnosis and procedure codes; human resource data	872 units; 54 hospitals	AHRQ: patient safety indicators and inpatient quality indicators. Includes; in-hospital mortality CHF; decubitus ulcer; failure to rescue; infection due to medical care; postoperative sepsis; proportion of patients with LOS > expected	Higher staffing at the hospital level is associated with lower mortality; lower failure to rescue; lower hospital acquired infections; and a reduction in patients experiencing a length of stay greater than expected.	Safety outcomes; Clinical outcomes
Blondal and Halldorsdottir (2009), Canada	Qualitative - phenomenology	Nil specific to study	Participant interviews	10 nurses	Experiences of pain management	Insight into how nurses assist patients who are experiencing pain.	Clinical outcomes
Bolton et al. (2003), USA	Cross-sectional survey	Nil specified	CALNOC data; Patient satisfaction survey	40 hospitals	Patient perceptions of nursing care	Dimension of respect for patient's values, preferences and expressed needs had a negative relationship with lower numbers of total nursing hours per patient day	Perception
Bolton et al. (2007a), USA	Cross-sectional survey	Nil specified	CALNOC data	187 units; 64 hospitals	Falls; pressure ulcer prevalence; restraint use prevalence;	No significant change in measured patient outcomes	Safety outcomes

Author (year), country	Design	Conceptual framework / model	Data source	Sample, setting	Patient indicator(s); Patient outcome(s) measured	Summary of findings	Theme(s)
						following implementation of mandatory staffing requirements in California.	
Boyle (2004), USA	Cross-sectional survey	Nil specified	Patient discharge data (N = 11496); Nurse surveys	390 nurses; 21 units; 1 hospital	Falls; pneumonia; UTI; hospital acquired pressure ulcers; cardiac arrest; mortality; length of stay; failure to rescue	Factor analysis of NWI-R and linkages between some factors and patient outcomes.	Safety outcomes
Brewer (2006), USA	Descriptive, correlational design	Transtheoretical integration model (TIM)	Nurse surveys, Multi-disciplinary staff surveys, Administration data	411 nurses; 16 units; 4 hospitals	Patient falls with injury; average length of stay	Culture impacts on falls and team processes impact on length of stay.	Safety outcomes; Clinical outcomes
Brokel and Hoffman (2005), USA	Case study	Nursing outcomes classification (NOC)	Nursing notes	103 patient – family units; 1 inpatient hospice; multiple community hospice settings	Dignified Dying Outcomes Tool (10 of the potential 25 Dignified Dying NOC patient outcomes)	Inter-rater reliability of NOC outcomes used was high; lessons learned from implementation.	Clinical outcomes; Functional outcomes; Safety outcomes
Butler et al. (2011), Australia, Netherlands, United Kingdom, Canada, USA	Systematic review	Nil specified	Secondary research (15 primary studies)	From primary studies	Patient mortality; risk-adjusted patient mortality; in-hospital death; length of patient's stay; hospital acquired infections; falls; pressure/decubitus ulcer; complications; medication errors.	No relationship between additional specialist nursing roles and mortality; attendance at ED; and re-admission rates. Increased specialist roles may result in shorter LOS and reduction in pressure ulcers.	Safety outcomes; Clinical outcomes
Capuano et al. (2005), USA	Case study	Nil specified	Nurse surveys	34 units; 1 hospital	Hospital-acquired pneumonia; hospital-acquired UTI; mortality; medication errors; patient falls; length of stay	High levels of overtime had a weak positive relationship with patient falls; UTI; and medication errors	Safety outcomes Clinical outcomes
Chaboyer et al. (2010), Australia	Cross-sectional survey	Transforming care at the bedside (TCAB) pillars	Clinical incidents	2 units; 1 hospital	Medication errors; patient falls; pressure ulcers	Action research project using TCAB improvement strategies resulted in	Safety outcomes

Author (year), country	Design	Conceptual framework / model	Data source	Sample, setting	Patient indicator(s); Patient outcome(s) measured	Summary of findings	Theme(s)
						approximately 50% reduction in measured adverse events.	
Chaboyer, McMurray and Wallis (2010), Australia	Descriptive case study	Donabedian's structure-process-outcome framework	532 observations of bedside handover; 34 nurse interviews	6 units; 2 hospitals	Accuracy of handover; patient-centred care; medication errors	Evaluation of bedside handover procedures and key learning for future implementation.	Safety outcomes; Clinical outcomes
Chang, Hughes and Mark (2006), USA	Descriptive design (secondary data analysis)	Intervening process theory (IPT)	Secondary data from Outcomes Research in Nursing Administration (ORNA II) project, (Nurses and patients)	228 units; 126 hospitals	Patient satisfaction; patient expectations for symptom management; patient falls; medication errors	Workgroup cohesion is positively related to higher patient satisfaction and meeting patient expectations for symptom management. Higher workgroup initiative is related to lower rates of patient falls.	Perception; Safety outcomes; Clinical outcomes
Cho, Hwang and Kim (2008), Korea	Descriptive design (secondary data analysis)	Nil specified	Secondary data (Nationwide ICU survey data; medical claims data; National Health Insurance data)	Tertiary hospitals: 10994 patients; 42 hospitals. Secondary hospitals: 16378 patients; 194 hospitals.	Mortality	In secondary hospitals, every additional patient per RN was associated with a 9% increase in the odds of dying.	Safety outcomes
Cho et al. (2003), USA	Descriptive design (secondary data analysis)	Nil specified	Secondary data (Hospital financial data; State inpatient databases)	124,204 patients; 232 hospitals	Patient fall / injury; pressure ulcer; adverse drug event; pneumonia; urinary tract infection; wound infection; sepsis; length of stay; mortality	Increased hours of RN care per patient day and percentage of RNs were both linked to a reduction in the odds of a patient developing pneumonia. Provision of a greater number of nursing hours per patient day was linked with an increased incidence of pressure ulcers.	Safety outcomes
Coban and Kasikci	Instrument	Nil specified	Patient survey	150 patients; 1	Patient perception of hospital	Patient Perception of	Perception

Author (year), country	Design	Conceptual framework / model	Data source	Sample, setting	Patient indicator(s); Patient outcome(s) measured	Summary of findings	Theme(s)
(2010), Turkey	validation			hospital	experience with nursing care	Hospital Experience with Nursing Care (PPHEN) was a valid and reliable measure of patients' satisfaction with nursing care.	
Corner et al. (2003), United Kingdom	Mixed methods case study	Nil specified	Participant interviews; surveys	76 patients; 12 community services	Quality of life; Palliative Care Outcomes Scale	Evaluation of quality of life, anxiety and outcomes amongst patients receiving specialist palliative care services.	Clinical outcomes; Functional outcomes
Courtney et al. (2007), Australia	Qualitative (Nominal group)	Nil specified	Nominal groups (x 2); Facility surveys (x 2)	Nominal groups: 21 and 14 participants. Facility surveys: 27 (4 facilities)	Frequency of documentation of a large range of clinical indicators within residential aged care services.	Validation of a Clinical Care Indicators (CCI) Tool for residential aged care in Australia.	Clinical Outcomes; Functional outcomes; Safety
Crowe et al. (2008), USA, Canada, Australia, Thailand, Hong Kong	Systematic review	Nil specified	Secondary research (9 primary studies)	From primary studies	Reduction of pain; Perception of pain; patient satisfaction with pain relief or management; length of hospital stay; amount of analgesia used	No strong evidence to support any specific nursing interventions for pain relief	Clinical outcomes
Dall et al. (2009), USA	Descriptive design (secondary data analysis)	Nil specified	Secondary data (National inpatient sample)	5.4 million discharges; 610 hospitals	UTI; pressure ulcer; pneumonia; DVT / PE; upper gastro-intestinal bleeding; CNS complication; sepsis; shock / cardiac arrest; surgical wound infection; pulmonary failure; mortality; length of stay	Increase in nurse staffing levels results in decreased risk of nosocomial complications and reduced length of hospital stay.	Safety outcomes; Clinical outcomes
Donaldson et al. (2005), USA	Cross-sectional survey	Nil specified	CALNOC data	162 units; 68 hospitals	Falls; hospital-acquired pressure ulcers	No significant differences in patient outcomes following implementation of mandated staff to patient ratios.	Safety outcomes
Doran et al. (2002), Canada	Cross-sectional survey	Nursing Role Effectiveness	Surveys and chart audits	372 patients; 254 nurses; 26 units; 1	Patient perception of the quality of nursing care; readiness to	Validation of conceptual framework (NREM) for	Clinical outcomes;

Author (year), country	Design	Conceptual framework / model	Data source	Sample, setting	Patient indicator(s); Patient outcome(s) measured	Summary of findings	Theme(s)
		Model (NREM)		hospital	resume usual activities; mood; therapeutic self-care ability	measuring patient outcomes of nursing care.	Functional outcomes; Perception
Doran et al. (2003), Canada	Descriptive, longitudinal study	Nursing Role Effectiveness Model (NREM)	Patient surveys; chart audits	409 patients; 4 hospitals	Functional status (FIM scores); Stanford Health Assessment Questionnaire (HAQ); Symptom Distress Scale; Brief Pain Inventory – Short Form; perceived health benefit from nursing care; patient satisfaction with nursing care	Reliability and validity of measured instruments evaluated; patients' functional health outcomes, pain and symptom distress improved from admission to discharge. Improvements in health outcomes were related to patients' perceived benefit from nursing care and satisfaction with nursing care.	Clinical outcomes; Functional outcomes; Perception
Doran et al. (2006a), Canada	Cross-sectional survey with repeated measures design	Nursing Role Effectiveness Model (NREM)	Patient surveys; chart audits	574 patients; 4 hospitals	Functional status; therapeutic self-care; nursing interventions (process variable)	Nursing interventions aimed at exercise promotion, positioning and self-care assistance predicted functional status outcome. Higher functional status predicted therapeutic self-care ability at discharge.	Clinical outcomes; Functional outcomes
Doran et al. (2006b), Canada	Cross-sectional survey with repeated measures design	Nursing Role Effectiveness Model (NREM)	Patient surveys; chart audits	890 patients; 4 hospitals; 8 long-term care facilities	Functional status; therapeutic self-care ability; symptom frequency and severity (pain, nausea, dyspnea, fatigue); nursing interventions (process variable)	Validity and reliability of assessment tools verified with significant relationship between nursing interventions and patient outcomes.	Clinical outcomes; Functional outcomes
Doran et al. (2009), Canada	Descriptive design (secondary data analysis)	Nil specified	Data from RAI-HC (for Canadian home-care clients)	238,958 cases	Safety risks (client characteristic; client behavioural characteristic; client living situation; healthcare management factors); adverse	Identification of potential safety problems amongst homecare clients.	Safety outcomes

Author (year), country	Design	Conceptual framework / model	Data source	Sample, setting	Patient indicator(s); Patient outcome(s) measured	Summary of findings	Theme(s)
					events		
Duffy, Hoskins and Seifert (2007), USA	Cross-sectional, descriptive study, instrument validation	Quality-caring model	Patient survey	557 patients; 5 hospitals	Presence of caring	Instrument validation for assessment of caring by patients in acute care settings.	Perception
Finch (2008), USA	Qualitative – grounded theory	Nil specified	Patient interviews	14 patients	Caring behaviours	Participants described personalised nurse caring with 3 phases: connecting as a family; conveying genuine concern; and taking care of needs.	Perception
Frank-Stromborg et al. (2002), USA	Descriptive, retrospective chart audit	Donabedian	Medical chart review; nurse survey	181 patients; 20 nurses	Symptom management (pain and fatigue); adverse events (infections and pressure ulcers); use of services (visits, admissions, unscheduled home visits)	No differences found between Oncology Certified RN's management of patients and non-certified RN's.	Clinical outcomes; Functional outcomes; Safety outcomes
Freitag and Carroll (2011), USA	Pilot descriptive study (quality improvement project)	Jean Watson's Caring Model	Patient satisfaction; NDNQI Indicators	1 unit; 1 hospital	Patient satisfaction; patient falls; use of patient restraint; catheter associated UTI's	Improvements in handover communication resulted in increased patient satisfaction and reduction in specified NSIs.	Perception; Safety outcomes
Friese and Aiken (2008), USA	Descriptive design (secondary data analysis)	Nil specified	Secondary data (state databases - coded medical record data; cancer registry)	24,618 patients; 164 hospitals	30 day mortality; post-operative complications; failure to rescue	Analysis of frequency and severity of complications that can be detected by nurses in the oncology population..	Safety outcomes
Friese et al. (2008), USA	Descriptive design (secondary data analysis)	Nil specified	Secondary data (inpatient discharge database; cancer registry records; AHA annual survey; nurse survey)	24, 618 patients; 164 hospitals	30 day mortality; complications from care; failure to rescue	Positive nurse practice environments result in improved patient outcomes (odds of death and failure to rescue) in oncology patients.	Safety outcomes

Author (year), country	Design	Conceptual framework / model	Data source	Sample, setting	Patient indicator(s); Patient outcome(s) measured	Summary of findings	Theme(s)
Frith et al. (2010), USA	Cross-sectional design	Nil specified	Secondary data (administrative databases)	34,838 patients; 11 units; 4 hospitals	Adverse events (hospital acquired injury, pressure ulcers, catheter associated UTI); length of stay	Higher numbers of nursing staff (RN and LPN) resulted in a reduction in adverse events and a shorter length of stay.	Safety outcomes; Clinical outcomes
Furukawa, Raghu and Shao (2010), USA	Descriptive design (secondary data analysis)	Nil specified	Secondary data (administrative databases)	326 hospitals	Patient safety indicators; pressure ulcers; failure to rescue; selected infections; in-hospital mortality	Electronic medical record implementation results in increased cost, increased RN hours and increased complications and decreased mortality for some conditions.	Safety outcomes
Furukawa, Raghu and Shao (2011), USA	Descriptive design (secondary data analysis)	Donabedian	Secondary data (administrative databases; NDNQI indicators)	3048 units; 509 hospitals	Falls; falls with injury; hospital acquired pressure ulcers	Electronic medical record implementation is not linked with improvements in patient outcomes (falls; falls with injury; hospital acquired pressure ulcers).	Safety outcomes
Gardner et al. (2007), USA	Descriptive, correlational design	Nil specified	Nurse survey; patient survey	199 nurses; 46 units	Patient satisfaction	Nurse turnover in dialysis resulted in lower patient satisfaction scores.	Perception
Griffiths et al. (2005), UK and USA	Systematic review	Nil specified	Secondary research (9 primary studies)	From primary studies	Mortality, discharge outcomes; functional status at discharge; length of stay	Nursing led units resulted in longer length of stay but reduced discharge to institutions and chance of readmission.	Safety outcomes; Functional outcomes; Clinical outcomes
Hall et al. (2003), Canada	Descriptive survey with repeated measures	Nil specified	Patient surveys	1811 patients; 19 hospitals	Functional status; pain control; patient satisfaction with nursing care	A higher proportion of RNs / RPNs on inpatient units is associated with better clinical outcomes.	Clinical outcomes; Functional outcomes; Perception
Hall, Doran and Pink (2004), Canada	Descriptive, correlational design	Nil specified	Administrative data	77 units; 19 hospitals	Patient falls; medication errors; wound infections; urinary tract infections	Higher proportion of professional nurses (RN's and RPN's) on medical and	Safety outcomes

Author (year), country	Design	Conceptual framework / model	Data source	Sample, setting	Patient indicator(s); Patient outcome(s) measured	Summary of findings	Theme(s)
						surgical wards are associated with lower rates of medication errors and wound infections.	
Halm et al. (2005), USA	Cross sectional survey	Nil specified	Patient discharge data; nurse survey	2709 patients; 140 nurses; 1 hospital	Mortality; failure to rescue	No association found between nurse staffing and mortality or failure to rescue.	Safety outcomes
Harless and Mark (2010), USA	Descriptive survey (longitudinal data from administrative datasets)	Nil specified	Secondary data (state databases)	11,945,276 inpatients; 283 hospitals	Mortality; failure to rescue	Increased RN staffing is associated with 0.043% reduction in mortality. A reduction in the rates of failure to rescue, were only observed at higher staffing levels.	Safety outcomes
Horn (2008), USA	Descriptive survey (secondary data analysis)	Nil specified	Secondary data (National Pressure Ulcer Long-Term Care study)	1376 residents; 82 nursing homes	Pressure ulcers	Higher RN hours in residential aged care were associated with lower rates of pressure ulcers.	Safety outcomes
Horn et al. (2005), USA	Descriptive survey (secondary data analysis)	Nil specified	Secondary data (National Pressure Ulcer Long-Term Care study)	1376 residents; 82 nursing homes	Pressure ulcers; UTI's; weight loss; catheterisation; deterioration in ability to perform ADL's; hospitalisation	Higher RN hours in residential aged care were associated with lower rates of adverse events and improved clinical outcomes.	Safety outcomes; Clinical outcomes
Jansson, Pilhammar-Andersson and Forsberg (2010), Sweden	Retrospective, cross-sectional design	Nil specified	Patient survey	87 patients; 2 hospitals	Health related quality of life; patients perception of quality of nursing care; adverse events (pneumonia, thrombosis, fractures); readmission rates; discharge outcomes	Documented care plans may lead to patient perceptions of higher quality of nursing care.	Clinical outcomes; Functional outcomes; Safety outcomes; Perception
Kane et al. (2007), Various	Systematic review and meta-	Nil specified	Secondary research (28	From primary studies	Hospital related mortality; failure to rescue; cardiac arrest; shock;	Despite different data definitions and levels of	Safety outcomes

Author (year), country	Design	Conceptual framework / model	Data source	Sample, setting	Patient indicator(s); Patient outcome(s) measured	Summary of findings	Theme(s)
	analysis		primary studies)		unplanned extubation; respiratory failure; deep venous thrombosis; upper gastrointestinal bleeding; surgical bleeding; patient falls; pressure ulcers; nosocomial infections; urinary tract infection; hospital acquired pneumonia; nosocomial bloodstream infection.	analysis (hospital and patient), an association between increased numbers of RNs and risk of in-hospital mortality and adverse events was found.	
Kazanjian et al. (2005), Various	Systematic review	Donabedian	Secondary research (27 primary studies)	From primary studies	Mortality	Social and environmental attributes of the nursing practice environment may be linked to mortality but strength of association and consistency between studies was not found.	Safety outcomes
Keleher et al. (2009), Various	Systematic review	Nil specified	Secondary research (31 primary studies)	From primary studies	Mortality; quality of life; compliance; knowledge; satisfaction with nursing care	Some evidence that nurses in primary care settings produce comparable results to doctors. In some studies nurse-led care was superior but consistency in results across settings was not found.	Safety outcomes; Functional outcomes; Perception
Konetzka, Stearns and Park (2008), USA	Descriptive survey (longitudinal analysis of secondary data)	Nil specified	Secondary data (nursing home minimum dataset; and administrative data)	399,206 nursing home resident observations	Pressure ulcers; urinary tract infections	Higher levels of RN staffing in nursing homes significantly reduces the likelihood of these adverse events.	Safety outcomes
Kovner et al. (2002), USA	Descriptive, cross-sectional survey	Ni specified	Secondary data (administrative data sets)	530 – 570 hospitals for each year	Venous thrombosis or pulmonary embolus after surgery; pulmonary compromise after surgery; urinary tract infection after surgery; pneumonia after surgery	RN hours are inversely related to rates of urinary tract infections following surgery.	Safety outcomes

Author (year), country	Design	Conceptual framework / model	Data source	Sample, setting	Patient indicator(s); Patient outcome(s) measured	Summary of findings	Theme(s)
Krapohl et al. (2010), USA	Descriptive, correlational survey	Donabedian	Nurse survey; patient data (NQF definitions)	866 nurses; 25 units	Central-line associated blood stream infection; ventilator associated pneumonia; prevalence of pressure ulcers	No significant relationship between certification of nurses and patient outcomes.	Safety outcomes
Lankshear, Sheldon and Maynard (2005), Various	Systematic review	Nil specified	Secondary research (22 primary studies)	From primary studies	Mortality; failure to rescue; urinary tract infection; pneumonia; wound infection; decubitus ulcers; medication errors; falls; complaints / satisfaction.	Some associations between higher nurse staffing and improved patient outcomes but effect size cannot be estimated due to variations in study quality.	Safety outcomes; Perception
Lindhardt, Nyberg and Hallberg (2008), Sweden	Cross-sectional survey	Nil specified	Survey	156 relatives; 2 hospitals	Patient satisfaction; involvement in decision making; perception of trust; satisfaction with discharge preparedness	Low satisfaction was significantly related to low levels of collaboration.	Perception; Functional outcomes; Clinical outcomes
Mallidou et al. (2011), Canada	Cross sectional survey	Martin's differentiation perspective of culture	Secondary data (International Hospital Outcomes Study)	6526 nurses; 109 hospitals	Nurse reports of adverse events; nurse perception of quality of care	Nurses' perceptions of culture impacted upon their perspective of the quality of care and incidence of adverse events.	Safety outcomes; Clinical outcomes
McCance, Slater and McCormack (2008), Not specified	Repeated measures, descriptive design	Person Centred Nursing framework	Patient survey; nurse survey	70 – 107 patients; 67 – 122 nurses (in each time frame)	Patients perception of caring	Validation of PCNI as a tool for measuring person-centred care; differences seen between nurses and patients perception of caring behaviour.	Clinical outcomes; Perception
McCloskey and Diers (2005), New Zealand	Retrospective, longitudinal analysis of secondary data	Needleman's conceptual framework	Secondary data (patient discharge databases; nurse surveys)	Approximately 3.3 million inpatient discharges; 65 221 nurse surveys	CNS complications; decubitus ulcers; deep vein thrombosis (DVT's) and pulmonary embolus (PE); pneumonia; sepsis; shock and cardiac arrest; upper gastro-intestinal bleeding; pulmonary failure; physiologic and metabolic derangement; surgical wound infections; length of stay;	Average length of stay decreased and adverse clinical outcomes increased substantially from 1993 to 2000. Mortality decreased among medical patients and remained stable in surgical patients.	Safety outcomes; Clinical outcomes

Author (year), country	Design	Conceptual framework / model	Data source	Sample, setting	Patient indicator(s); Patient outcome(s) measured	Summary of findings	Theme(s)
					and mortality		
McCutcheon et al. (2009), Canada	Descriptive, correlational design	Transformational Leadership theory; Span of control theory; Contingency theory of leadership	Nurse survey; patient survey	717 nurses; 680 patients; 51 units	Patient satisfaction	Leadership style and span of control impacted on the effects of transformational and transactional leadership styles on patient satisfaction.	Perception
Minnick et al. (2007), USA	Descriptive survey	Nil specified	Interviews; medical record reviews and physical measurement; nurse surveys	137 units; 40 hospitals	Physical restraint use	Physical restraint use was best predicted by patient characteristics rather than resource clusters or resources in individual units.	Safety outcomes
Muller-Staub et al. (2008), USA	Cluster, randomised controlled experimental design	NANDA / NIC / NOC	Record review	225 nursing records	Documentation of nursing diagnoses; interventions; and outcomes	Guided clinical reasoning is effective in supporting nurse' abilities to state accurate nursing diagnoses, record interventions and assess and document patient outcomes.	Clinical outcomes; Safety outcomes; Functional status
Needleman et al. (2011), USA	Retrospective, observational study using secondary data	Nil specified	Patient discharge abstracts; nurse staffing data	197961 admissions; 176696 nursing shifts; 43 units; 1 hospital	Mortality	Staffing of RNs below target levels was associated with increased mortality.	Safety outcomes
Needleman et al. (2006), USA	Cross-sectional survey (using secondary data)	Nil specified	Patient discharge abstracts; nurse staffing data	799 hospitals	Length of stay; urinary tract infection; hospital-acquired pneumonia; shock or cardiac arrest; upper GI bleeding; failure to rescue	An increase in the proportion of nursing hours (and percentage of care provided by RNs) reduces LOS; decreases adverse events and prevents avoidable deaths.	Safety outcomes; Clinical outcomes
Oflaz and Vural (2010), Turkey	Cross-sectional survey	Nil specified	Patient survey	454 patients	Perception of nursing care	The actions of nurses impact upon patient perceptions of care and	Perception

Author (year), country	Design	Conceptual framework / model	Data source	Sample, setting	Patient indicator(s); Patient outcome(s) measured	Summary of findings	Theme(s)
						satisfaction with care.	
Otani, Herrmann and Kurz (2011), USA	Cross-sectional survey	Nil specified	Secondary data analysis (patient survey data)	31471 patient surveys	Perception of nursing care	The highest priority of patients is to be treated with courtesy and respect.	Perception
Papastavrou, Efstathiou and Charalambous (2011), Various	Systematic review	Nil specified	Secondary research (23 primary studies)	From primary studies	Patient perceptions of caring in nursing	Important differences found between patients and nurses perceptions of caring and caring behaviours.	Clinical outcomes
Pappas (2008), USA	Retrospective, descriptive survey	Nil specified	Secondary data analysis (financial and staffing data from hospital systems; patient discharge abstracts; chart audits)	2495 patients; 6 units; 2 hospitals	Medication errors; patient falls; urinary tract infection (UTI); pneumonia; pressure ulcers	This study enabled the cost of adverse events to be calculated (1029 US$ per case for medical patients; 903 US$ for surgical patients).	Safety outcomes
Patrician et al. (2010), USA	Descriptive survey	Donabedian	Prevalence surveys; patient satisfaction surveys; nurse surveys; adverse event data; staffing data	111500 shifts; 57 units; 13 hospitals (1500 nurse surveys; 1700 patient satisfaction surveys; 1684 prevalence surveys)	Falls; medication errors; pressure ulcer prevalence; restraint prevalence; patient satisfaction with care; patient satisfaction with planning for needs after discharge; patient satisfaction with pain management; patient satisfaction with education	Validation of MilNOD data collection methodology.	Safety outcomes; Perception
Patrician et al. (2011), USA	Descriptive survey	Donabedian	Adverse event data; staffing data	115062 shifts; 57 units; 13 hospitals	Falls; falls with injury; medication administration errors	RN skill mix, total nursing hours, and experience of staff were associated with shift-level adverse events.	Safety outcomes
Poochikian-Sarkissian et al. (2010), Canada	Descriptive, correlational design	Person-centred care	Nurse survey; numerous patient surveys	63 nurses; 44 patients	Individualisation of care; patient participation in care; functional status; self-care ability; satisfaction with care	Person-centred care was associated with high levels of patient self-care.	Functional outcomes; Clinical outcomes; Perception

Author (year), country	Design	Conceptual framework / model	Data source	Sample, setting	Patient indicator(s); Patient outcome(s) measured	Summary of findings	Theme(s)
Potter et al. (2003), USA	Prospective, correlational design	Nil specified	Adverse event data; numerous patient surveys	3418 patients; 32 units	Falls; medication errors; patient reports of symptom management, self-care and health status; patient satisfaction	Negative correlation between percentage of RN hours and patients perception of pain. A positive correlation was found between percentage of RN hours and patient satisfaction.	Safety outcomes; Clinical outcomes; Perception
Radwin, Alster and Rubin (2003), USA	Cross-sectional survey, instrument validation	Nil specified	Patient surveys	436 patients	Patient satisfaction	Oncology Patients' Perceptions of the Quality of Nursing Care Scale (OPPQNCS) validated. 45 items within four constructs: responsiveness; individualization; coordination; proficiency.	Perception
Radwin, Cabral and Wilkes (2009), USA	Non-experimental, longitudinal, prospective survey	Quality Health Outcomes model	Patient surveys; nurse surveys	173 patients; 49 nurses	Patient satisfaction; trust in nurses; optimism; fortitude; well-being; acuity; illness severity	Responsiveness, individualization, and proficiency are all recognised as markers of person-centred nursing care.	Perception; Clinical outcomes
Rimar and Diers (2006), USA	Retrospective, correlational study	Nil specified	Medical discharge abstracts for 11 DRG's	9895 potential patients; 1 hospital	Length of stay; Mortality	Inverse relationship found between volume of patients with a specific DRG and length of stay. Negative relationships found between volume of patients with a specific DRG and mortality.	Clinical outcomes; Safety
Roche et al. (2010), Australia	Retrospective, descriptive survey	Present but not explained	Secondary data analysis (incident data and / or medical record review)	94 wards; 21 hospital	Falls,; medication errors	Violence towards nurses was associated with increases in medication errors.	Safety outcomes

Author (year), country	Design	Conceptual framework / model	Data source	Sample, setting	Patient indicator(s); Patient outcome(s) measured	Summary of findings	Theme(s)
Sasichay-Akkadechanunt, Scalzi and Jawad (2003), Thailand	Retrospective, cross-sectional, observational design	Nil specified	Discharge abstracts	2531 patients; 10 units; 1 hospital	Mortality	The ratio of the total number of nursing staff to patients was the best predictor of in-hospital mortality.	Safety outcomes
Scherb, Stevens and Busman (2007), USA	Retrospective, descriptive design	Nursing outcomes classification (NOC)	Medical record entries	29 patients	Dehydration	The Nursing Outcomes Classification (NOC) was evaluated and statistically significant improvements were found in 7 out of 8 NOC outcomes.	Clinical outcomes
Schneider, Barkauskas and Keenan (2008), USA	Quasi-experimental pre and post-test design	Nil specified	Patient records	106 home-healthcare clients	Self-care; coping; illness management behaviour	Neither the Nursing Outcomes Classification (NOC) or Outcome and Assessment Information Set (OASIS) are sensitive to home healthcare nursing intensity. NOC is sensitive to changes in patient outcomes.	Clinical outcomes
Schubert et al. (2009), Switzerland	Descriptive, cross-sectional survey	Nil specified	Patient survey; nurse survey	1338 nurses; 779 patients	Rationing of nursing care; patient satisfaction; nurse reports of numbers of medication errors; nurse reports of numbers of patient falls; nurse reports of numbers of nosocomial infections; nurse reports of numbers of critical incidents; nurse reports of numbers of pressure ulcers	Rationing of nursing care is sensitive to nosocomial infections, pressure ulcers and patient satisfaction.	Safety outcomes; Perception
Seago (2008), USA	Descriptive, cross-sectional, correlational design	Nil specified	Patient survey; nurse survey	470 patients; 314 nurses; 60 units; 21 hospitals	Patient satisfaction with pain management; patient satisfaction with teaching; patient satisfaction with physical care; functional status	Higher patient functional status was related to patient satisfaction with pain management. Lower total hours worked by a nurse	Perception; Clinical outcomes; Functional outcomes

Author (year), country	Design	Conceptual framework / model	Data source	Sample, setting	Patient indicator(s); Patient outcome(s) measured	Summary of findings	Theme(s)
						were related to higher patient satisfaction with physical care.	
Shuldham et al. (2009), UK	Case study using restrospective data	Nil specified	Coded medical record data; Pressure ulcer prevalence survey; Incident reports	23 192 adult patients; 2315 children	Pressure sores; Patient falls; Upper gastrointestinal bleed; Pneumonia; Sepsis; Shock; and Deep Vein Thrombosis.	No statistically significant relationships between staffing and nurse-sensitive outcomes.	Safety outcomes
Sidani (2008), Canada	Repeated measures design	Nil specified	Patient survey	320 patients; 8 hospitals	Functional status; self-care ability; satisfaction with care	Patient-centred care (PCC) is evident in the work of acute care nurse practitioners. Implementation of PCC was positively associated with some domains of self-care ability and satisfaction with care.	Functional outcomes; Clinical outcomes; Perception
Skrutkowski et al. (2008), Canada	Randomised controlled trial	Symptom management model	Patient assessment instruments	190 patients	Symptom distress; fatigue; quality of life; functional status	Pivot nurses (as compared with routine outpatient services) do not have a significant impact on symptom distress; fatigue or functional status for oncology patients.	Clinical outcomes; Functional outcomes
Sochalski (2004), USA	Descriptive, cross-sectional survey	Nil specified	Secondary data analysis (nursing survey)	8670 nurses	Medication errors; patient falls with injuries; unfinished care (tasks left undone)	Structural measures (workload) and process measures (unfinished care and safety problems) were used to assess the quality of nursing care. Unfinished care had a strong relationship with variation in quality ratings.	Safety outcomes; Clinical outcomes
Sochalski et al.	Descriptive,	Nil specified	Secondary data	348720 patients	AMI mortality; failure to rescue	Increases in staffing do not	Safety

Author (year), country	Design	Conceptual framework / model	Data source	Sample, setting	Patient indicator(s); Patient outcome(s) measured	Summary of findings	Theme(s)
(2008), USA	cross sectional survey		(administrative data sets; coded medical record data; staffing data)	with AMI; 109066 surgical failure to rescue patients; 343 hospitals	among surgical patients	uniformly improve AMI mortality or surgical failure to rescue rates.	outcomes
Sofaer et al. (2005), USA	Descriptive, qualitative study	Nil specified	Focus group interviews	153 patients	Patient satisfaction	Content of HCAHPS hospital survey reviewed by participants. Items related to doctor communication, nurse and hospital staff communication, responsiveness to patient needs, and cleanliness of the hospital room and bathroom were deemed important.	Perception
Stone et al. (2006), USA	Cross sectional design	Modified Donabedian framework	Nurse surveys; administrative data	805 nurse surveys; 26 hospitals	Medication errors; falls; pressure ulcers; failure to rescue; postoperative pulmonary emboli or deep vein thrombosis; postoperative respiratory failure; nurse perception of quality of care	No difference found between 8 hour shifts and 12 hour shifts on patient outcomes.	Safety outcomes
Stone et al. (2007), USA	Observational study	Modified Donabedian framework	Secondary data (National Nosocomial Infection Surveillance data and Medicare files)	15846 patients; 51 units; 31 hospitals; 1095 nurses	Central line associated bloodstream infections (CLBSI); ventilator associated pneumonia; catheter associated UTI; 30 day mortality; decubitus ulcers	Units with higher staffing had lower incidences of CLBSI, ventilator-associated pneumonia, catheter associated UTI, 30 day mortality and decubitus ulcers. Increased overtime was associated with higher rates of CLBSI and decubitus ulcers.	Safety outcomes
Suhonen, Valimaki	Cross-sectional,	Nil specified	Patient survey	1093 patients	Patient perception of nursing care	Exploration of between-	Perception

Author (year), country	Design	Conceptual framework / model	Data source	Sample, setting	Patient indicator(s); Patient outcome(s) measured	Summary of findings	Theme(s)
and Leino-Kilpi (2009), UK, Finland, Greece and Sweden	comparative study					country differences in evaluating patient's perceptions of the nursing care they receive. Validation of the Schmidt Perception of Nursing Care Survey.	
Suhonen, Valimaki and Leino-Kilpi (2005), Finland	Cross-sectional, descriptive, correlational study	Nil specified	Patient survey; patient assessment tools	279 patients	Individualised care; patient satisfaction; health related quality of life	The higher the perception of individuality in care received the higher the satisfaction with care experienced by the patient.	Perception; Functional outcomes
Suhonen et al. (2007), Finland	Cross-sectional, correlational study	The outcome model of individualised care	Patient survey; patient assessment tools	861 patients	Individualised care; patient satisfaction; health related quality of life	Individualised care is directly linked to positive patient outcomes (patient satisfaction; patient autonomy; perceived health-related quality of life).	Perception; Functional outcomes
Sujijantararat, Booth and Davis (2005), Thailand	Prospective, descriptive, correlational design	Nil specified	Positive urine culture results	389 patients; 19 units; 1 hospital	Nosocomial urinary tract infections	Higher amounts of nursing hours per patient day were associated with fewer nosocomial urinary tract infections.	Safety outcomes
Tervo-Heikkinen et al. (2008), Finland	Cross-sectional survey	Nil specified	Patient survey	1730 patients; 34 units; 4 hospitals	Patient satisfaction	The proportion of RNs, the patient to RN ratio, and the RN's experience in nursing were all highly associated with patient satisfaction. Eight patients per RN was the cut off point for patient satisfaction.	Perception
Thomas-Hawkins, Flynn and Clarke (2008), USA	Cross-sectional, correlational design	Nursing organisation and outcomes model	Nurse surveys	422 nurses	Nursing tasks left undone; emergency room visits due to fluid overload; hospitalisations	High patient to RN ratios and increased numbers of tasks left undone were	Safety outcomes

Author (year), country	Design	Conceptual framework / model	Data source	Sample, setting	Patient indicator(s); Patient outcome(s) measured	Summary of findings	Theme(s)
					due to pneumonia; vascular access infection; vascular access thrombosis; unusual bleeding from the vascular access; falls without injury; falls with injury; medication errors; dialysis hypotension; shortened dialysis treatment; skipped dialysis treatment; patient complaints	associated with increased likelihood of dialysis related hypotension; skipped dialysis treatments; shortened dialysis treatments; and patient complaints within hemodialysis units.	
Thungjaroenkul, Cummings and Embleton (2007), US, Australia, Austria, Canada, Taiwan	Systematic review	Nil specified	Secondary research (17 primary studies)	From primary studies	Length of stay	No conclusive link between volume of nursing staff and its effect on length of stay (or cost).	Clinical outcomes
Tourangeau et al. (2007), Canada	Retrospective, cross-sectional survey	The determinants of mortality model	Secondary data (administrative data sets); nurse surveys	46993 patients; 5980 nurses; 75 hospitals	30 day mortality; nurse reports of quality of care; nurse reports of teamwork when delivering care; use of clinical care maps / pathways	Lower 30 day hospital mortality rates were associated with hospitals that had higher proportions of RNs in their skill mix; higher proportions of baccalaureate-prepared nurses; lower nurse staffing dose; higher use of care maps; higher nurse reported quality of care; and lower nurse-reported adequacy of manager ability and support.	Safety outcomes; Clinical outcomes
Trinkoff et al. (2011), USA	Cross-sectional survey	Nil specified	Administrative data sets; discharge abstracts	633 nurses; 71 hospitals	Mortality (pneumonia; abdominal aortic aneurysm; congestive heart failure; acute myocardial infarction; stroke; craniotomy)	Work schedule has an independent effect on patient mortality.	Safety outcomes
Twigg et al. (2011), Australia	Interrupted time series using	Needleman's conceptual	Patient discharge abstracts; nurse	236454 patients; 150925 nurses; 3	Central nervous system complications; wound infections;	Mandated minimum nursing hours per patient	Safety outcomes;

Author (year), country	Design	Conceptual framework / model	Data source	Sample, setting	Patient indicator(s); Patient outcome(s) measured	Summary of findings	Theme(s)
	retrospective data	framework	staffing records	hospitals	pulmonary failure; urinary tract infection; pressure ulcer; pneumonia; deep vein thrombosis; ulcer/gastritis/upper gastrointestinal bleed; sepsis; physiologic/metabolic derangement; shock/cardiac arrest; mortality; failure to rescue; and length of stay.	day (NHPPD) resulted in significant decreases in the rates of nine nursing-sensitive outcomes at *hospital* level and five nursing-sensitive outcomes at *ward* level.	Clinical outcomes
Vahey et al. (2004), USA	Cross-sectional survey	Nil specified	Nurse surveys; patient surveys	621 patients; 820 nurses; 40 units; 20 hospitals	Patient satisfaction	Patients on nursing units that have adequate staff, good administrative support, and good relations between doctors and nurses were more than twice as likely to report high satisfaction with their care.	Perception
Van den Heede et al. (2009), Belgium	Cross-sectional survey	Nil specified	Administrative data sets (Belgian nursing minimum dataset; Belgian hospital discharge dataset)	260923 patients; 1403 units; 115 hospitals	Pressure ulcers; deep vein thrombosis; shock or cardiac arrest; postoperative respiratory failure; postoperative complications and infections; urinary tract infections; hospital-acquired pneumonia; ventilator-associated pneumonia; hospital-acquired sepsis; in-hospital mortality; failure to rescue.	No association was found between hospital level nurse staffing and patient outcomes.	Safety outcomes
van Gaal et al. (2011), Netherlands	Cluster, randomised controlled trial	Nil specified	Adverse event data	2201 hospital patients (3358 patient weeks) and 392 nursing home patients (5799 patient weeks) in 4 hospitals and 6 nursing homes	Pressure ulcers; urinary tract infections; falls	Simultaneous implementation of multiple guidelines resulted in fewer adverse events within the intervention group following implementation of a patient safety programme.	Safety outcomes

Author (year), country	Design	Conceptual framework / model	Data source	Sample, setting	Patient indicator(s); Patient outcome(s) measured	Summary of findings	Theme(s)
Visvanathan, Penhall and Chapman (2004), Australia	Prospective, cross-sectional survey	Nil specified	Patient assessment	65 patients; 1 hospital	Discharge outcomes	Nutritional screening and poor nutritional status was predictive of poor discharge outcomes.	Clinical outcomes
Weiss, Yakusheva and Bobay (2010), USA	Cross-sectional survey	Nil specified	Nurse survey; patient survey; patient discharge data	162 patients; 13 units; 4 hospitals	Patient perception of discharge readiness	Patient perception of discharge readiness was not associated with discharge utilisation. Discharge utilisation was associated with the nurse's perception of patient's readiness for discharge.	Clinical outcomes
Whitman et al. (2002a), USA	Prospective, observational survey	Nil specified	Secondary data analysis (outcomes database)	95 units; 10 hospitals	Central line infections; pressure ulcers; medication errors; falls; satisfaction with nurse management of pain; restraint application rate	Use of unit type as a risk adjustment strategy is effective when analysing nursing-sensitive outcomes.	Safety outcomes; Perception
Whitman et al. (2002b), USA	Prospective, observational survey	Nil specified	Secondary data analysis (outcomes database)	95 units; 10 hospitals	Central line blood-associated infections; pressure ulcers; medication errors; falls; restraint application rate	The impact of nurse staffing on studied patient outcomes is highly variable across specialty units. When present, the relationships are inversely related with lower staffing related to higher rates of all adverse outcomes.	Safety outcomes
Wong and Cummings (2007), USA and Canada	Systematic review	Nil specified	Secondary research (7 primary studies)	From primary studies	Patient satisfaction; patient mortality and patient safety outcomes; adverse events; complications	Evidence of significant associations between positive leadership behaviours, styles or practices and increased patient satisfaction and reduced adverse events. No conclusive links between mortality and leadership.	Perception; Safety outcomes

Author (year), country	Design	Conceptual framework / model	Data source	Sample, setting	Patient indicator(s); Patient outcome(s) measured	Summary of findings	Theme(s)
Yang and Huang (2005), Taiwan	Descriptive cross-sectional survey	Nurses' morale and its impact on patient satisfaction	Nurse survey; patient survey	332 nurses; 265 patients; 21 units; 1 hospital	Patient satisfaction	Nurses' work morale may not impact on patient satisfaction but it accounts for 66.7% of the discriminative power to predict nursing-sensitive patient satisfaction.	Perception
Yen and Lo (2004), Taiwan	Cross-sectional survey	Donabedian	Patient survey	755 patients	Patient perception of nursing care; perceived nursing care quality; coordination of care; continuity of care; comfort; length of stay	Process variables (patient perception of continuity and quality of care) positively influenced patient perceptions of care and patient satisfaction. Higher perceptions of coordination of care resulted in shorter length of stay.	Perception; Clinical outcomes

APPENDIX 2: UOW HREC APPROVAL DOCUMENTATION

University of Wollongong

INITIAL APPLICATION APPROVAL
In reply please quote: HE10/059
Further Enquiries Phone: 4221 4457

8 March 2010

Mrs Jenny Sim
Nursing Education centre
Shoalhaven Campus
University of Wollongong
PO Box 5080
NOWRA NSW 2541

Dear Mrs Sim,

I am pleased to advise that the Human Research Ethics application referred to below has been reviewed and the ethical aspects **approved**.

Please include reference to consent to audio-taping of the focus groups on the Consent Forms where appropriate.

Ethics Number:	HE10/059
Project Title:	Nursing sensitive outcomes: consensus opinion on the importance and potential usefulness for evaluating holistic nursing practice
Name of Researchers:	Mrs Jenny Sim, Professor Patrick Crookes, Professor Kenneth Walsh
Approval Date:	25 February 2010
Expiry Date:	24 February 2011

This certificate relates to the research protocol submitted in your original application.

The University of Wollongong/SESIAHS Health and Medical HREC is constituted and functions in accordance with the NHMRC *National Statement on Ethical Conduct in Human Research.* The HREC has reviewed the research proposal for compliance with the *National Statement* and approval of this project is conditional upon your continuing compliance with this document. As evidence of continuing compliance, the Human Research Ethics Committee requires that researchers immediately report:

- proposed changes to the protocol including changes to investigators involved
- serious or unexpected adverse effects on participants
- unforseen events that might affect continued ethical acceptability of the project.

You are also required to complete monitoring reports annually and at the end of your project. These reports are sent out approximately 6 weeks prior to the date your ethics approval expires. The reports must be completed, signed by the appropriate Head of Unit, and returned to the Research Services Office prior to the expiry date.

Yours Sincerely,

pp. Dr Nadia Crittenden
Chairperson
UOW&SESIAHS Health and Medical HREC

cc: Professor Patrick Crookes; Faculty of Health & Behavioural Science

Research Services Office University of Wollongong NSW 2522 Australia
Telephone: +61 2 4221 3386 **Facsimile:** +61 2 4221 4338
research_services@uow.edu.au www.uow.edu.au/research
CRICOS Provider No: 00102E

AMENDMENT/RENEWAL APPROVAL
In reply please quote: SF:SH - HE10/059
Further Enquiries Phone: 4221 4457

28 March 2011

Mrs Jenny Sim
Nursing Education Centre
Shoalhaven Campus
University of Wollongong
PO Box 5080
NOWRA NSW 2541

Dear Mrs Sim,

I am pleased to advise that the amendments dated 3 February 2011 to the following Human Research Ethics application have been approved.

Ethics Number: HE10/059

Project Title: Nursing sensitive outcome measures: seeking consensus on the importance and potential usefulness for evaluating nursing practice

Name of Researchers: Mrs Jenny Sim, Professor Patrick Crookes, Professor Kenneth Walsh

Amendment/s: Change of Title

Interviews conducted via Skype

Updated Participant Information Sheet and Consent Forms:

- Participant Information Sheet for Expert Nurses Interview
- Participant Information Sheet for Health Consumer Focus Group
- Participant Information Sheet for Modified Delphi Survey
- Consent Form for Focus Groups
- Invitation to Participate in Expert Nurses Interview
- Invitation to Participate for health Consumer Focus Group
- Invitation to Participate for Modified Delphi Survey Participants
- Expert Nurses Skype Interview script
- Focus Group Guidelines – Health Consumer Group
- Consent Form for Interviews

Amendment/Renewal Approval Date: 25 March 2011

Expiry Date: 24 February 2012

Research Services Office University of Wollongong NSW 2522 Australia
Telephone: +61 2 4221 3386 **Facsimile:** +61 2 4221 4338
research_services@uow.edu.au www.uow.edu.au/research

Please remember that in addition to reporting proposed changes to your research protocol the HREC requires that researchers immediately report:

- serious or unexpected adverse effects on participants
- unforseen events that might affect continued ethical acceptability of the project.

You are also required to complete monitoring reports annually and at the end of your project. These reports are sent out approximately 6 weeks prior to the date your ethics approval expires. The reports must be completed, signed by the appropriate Head of School, and returned to the Research Services Office prior to the expiry date.

The University of Wollongong/SE Sydney and Illawarra Area Health Service Health and Medical HREC is constituted and functions in accordance with the NHMRC *National Statement on Ethical Conduct in Human Research.*

Yours Sincerely,

Professor Jim Greenstein
Chairperson
UOW&SESIAHS Health and Medical HREC

cc: Professor Patrick Crookes; Faculty of Health & Behavioural Science

University of Wollongong

RENEWAL APPROVAL
In reply please quote: HE10/059
Further Enquiries Phone: 4221 3386
SF:SH

19 April 2012

Mrs Jenny Sim
Nursing Education Centre
Shoalhaven Campus
University of Wollongong
PO Box 5080
NOWRA NSW 2541

Dear Mrs Sim

Thank you for submitting the progress report. I am pleased to advise that renewal of the following Human Research Ethics application has been approved. This certificate relates to the research protocol submitted in your original application and all approved amendments to date.

Ethics Number:	HE10/059
Project Title:	Nursing sensitive outcome measures: seeking consensus on the importance and potential usefulness for evaluating nursing practice
Name of Researchers:	Mrs Jenny Sim, Professor Patrick Crookes, Professor Kenneth Walsh
Approved from:	25 March 2012
Expiry Date:	30 June 2012

Please note that approvals are granted for a twelve month period. Further extension will be considered on receipt of a progress report prior to expiry date.

This certificate relates to the research protocol submitted in your original application and all approved amendments to date. Please remember that in addition to completing an annual report the Human Research Ethics Committee also requires that researchers immediately report:

- proposed changes to the protocol including changes to investigators involved
- serious or unexpected adverse effects on participants
- unforseen events that might affect continued ethical acceptability of the project.

Yours sincerely

Associate Professor Sarah Ferber
Chair, UOW & ISLHD Health and Medical
Human Research Ethics Committee

cc: Professor Patrick Crookes; Faculty of Health & Behavioural Science

Research Services Office University of Wollongong NSW 2522 Australia
Telephone +61 2 4221 3386 **Facsimile** +61 2 4221 4338
research_services@uow.edu.au www.uow.edu.au/research

APPENDIX 3: ETHICAL APPROVAL FROM SOUTH EASTERN SYDNEY ILLAWARRA AREA HEALTH SERVICE (SESIAHS)

SOUTH EASTERN SYDNEY
ILLAWARRA
NSW HEALTH

Research Directorate
Telephone: 02 4253 4800
Facsimile: 02 4253 4823

TRIM NO: D10/65950
Ref: HE10/059
APPROVAL

Mrs Jenny Sim
University of Wollongong
Shoalhaven Campus
P O box 5080
NOWRA DC NSW 2541

Dear Mrs Sim

HREC multi-centre project number: HE10/059
Project title: Nursing sensitive outcomes: consensus opinion on the importance and potential usefulness for evaluating holistic nursing practice

Thank you for submitting a Site-Specific Assessment application for authorisation of the above project. I am pleased to inform you that authorisation has been granted for this study to take place at the following sites:

- SESIAHS Nursing & Midwifery Units

The following conditions apply to this research project. These are additional to those conditions imposed by the Human Research Ethics Committee that granted ethical approval:

1. Proposed amendments to the research protocol or conduct of the research which may affect the ethical acceptability of the project, and which are submitted to the lead HREC for review, are copied to the research governance officer;
2. Proposed amendments to the research protocol or conduct of the research which may affect the ongoing site acceptability of the project, are to be submitted to the research governance officer.

Yours faithfully

KRISTY PIERCE
Research Governance Officer

24 November 2010

RESEARCH DIRECTORATE
Level 8, Block C, Wollongong Hospital
(LMB 8808, SCMC NSW 2521)

APPENDIX 4: PARTICIPANT INFORMATION SHEET (CONSUMER GROUP INTERVIEWS)

University of Wollongong

Participant Information Sheet for Health Consumer Group Interviews

Nursing sensitive outcome measures: seeking consensus on their importance and potential usefulness for evaluating nursing practice

Researcher: Mrs Jenny Sim
Supervisors: Professor Patrick Crookes & Professor Kenneth Walsh

Dear Participant, Friday 1st July 2011

PURPOSE OF THE RESEARCH
This is an invitation to participate in a study conducted by researchers at the University of Wollongong. The purpose of the research is to obtain information about the contribution that nurses and nursing care make to patient outcomes, so that a mechanism of measuring the impact of nursing care can be developed. The contribution you make will assist in developing a survey that will be undertaken by nurses in public and private sector health care organisations.

INVESTIGATORS

Mrs Jenny Sim	Prof Patrick Crookes	Prof Ken Walsh
Ph: 02 4429 1551	Ph: 02 4221 4208	Ph: 02 4221 3472
jennysim@uow.edu.au	patrick_crookes@uow.edu.au	kenw@uow.edu.au

METHOD AND DEMANDS ON PARTICIPANTS
If you choose to participate, you will be asked to take part in a group interview by a member of the research team. This group interview will involve approximately 6 to 8 participants and will be audio taped. At the group interview you will be asked to discuss your experiences of nursing care and identify the contributions that nurses and nursing care make to patient outcomes. You will be invited to share your views on what quality nursing care is and how it could be measured. This discussion will facilitate development of a modified Delphi survey which will then be administered to a wide cross section of nurses in public and private sector health care organisations.

POSSIBLE RISKS, INCONVENIENCES AND DISCOMFORTS
Apart from a maximum of 2 hours of your time for the group interview, we can foresee no risks for you. Your involvement in the study is voluntary and you may withdraw your participation from the study at any time, however any data that you provide will not be identified so can not be withdrawn. Refusal to participate in the study will not affect your relationship with the University of Wollongong.

FUNDING AND BENEFITS OF THE RESEARCH
This study is not funded by a research grant or any external body. Findings from the study will be used for completion of a research thesis, and will also be used in summary form for conference proceedings and journal publications. Your confidentiality is assured as no comments you make will be attributed to you and all data will be de-identified during transcription and securely stored.

ETHICS REVIEW AND COMPLAINTS
This study has been reviewed by the Human Research Ethics Committee of the University of Wollongong. If you have any concerns or complaints regarding the way this research has been conducted, you can contact the UoW Ethics Officer on (02) 4221 4457.

If you are interested in obtaining additional information about this research please contact me via email - jennysim@uow.edu.au

Kind Regards

Jenny Sim

APPENDIX 5: CONSENT FORM (CONSUMER GROUP INTERVIEWS)

University of Wollongong

CONSENT FORM FOR CONSUMER GROUP INTERVIEW

Nursing sensitive outcome measures: seeking consensus on their importance and potential usefulness for evaluating nursing practice

Researcher: Mrs Jenny Sim
Supervisors: Professor Patrick Crookes & Professor Kenneth Walsh

I have been given information about the study 'nursing sensitive outcome measures: seeking consensus on their importance and potential usefulness for evaluating nursing practice'.

I have discussed the research project with Jenny Sim who is conducting this research as part of a Masters in Nursing (Research) degree supervised by Professor Patrick Crookes and Professor Kenneth Walsh in the School of Nursing, Midwifery and Indigenous Health at the University of Wollongong.

I understand that if I consent to participate in this project I will participate in a group interview.

I understand that my contribution will be confidential and that there will be no personal identification in the data that I agree to allow to be used in the study.

I have been advised there are no anticipated risks to me as a participant and this research can be categorised as negligible risk research. I have had an opportunity to ask Jenny Sim any questions I may have about the research and my participation.

I understand that my participation in this research is voluntary, I am free to refuse to participate and I am free to withdraw from the research at any time. My refusal to participate or withdrawal of consent will not affect my relationship with the School of Nursing, Midwifery and Indigenous Health or my relationship with the University of Wollongong.

If I have any enquiries about the research, I can contact: Jenny Sim on 02 4429 1551 or Professor Patrick Crookes on 02 4221 4068 or if I have any concerns or complaints regarding the way the research is or has been conducted, I can contact the Ethics Officer, Human Research Ethics Committee, Office of Research, University of Wollongong on 02 4221 4457.

By signing below I am indicating my consent to participate in this research. I understand that the data collected from my participation will be used for completion of the research thesis, and will also be used in summary form for conference proceedings and journal publications, and I consent for it to be used in that manner.

Signed ..... Date ...../...../.....

Name (please print)

.....

APPENDIX 6: INTERVIEW GUIDELINE (CONSUMER GROUP INTERVIEWS)

Consumer Group Interview Guidelines

Nursing sensitive outcome measures: seeking consensus on their importance and potential usefulness for evaluating nursing practice

Researcher: Mrs Jenny Sim
Supervisors: Professor Patrick Crookes & Professor Kenneth Walsh

Location:
The group interview will be run at the University of Wollongong in a classroom or meeting room type setting

Introduction:
Facilitator introduces research topic

Title - Nursing sensitive outcome measures: seeking consensus on their importance and potential usefulness for evaluating nursing practice

Aim - The purpose of the research is to obtain information about the contribution that nurses and nursing care make to patient outcomes, so that a mechanism of measuring the impact of nursing care can be developed.

Objectives
- To explore the contribution that nursing care makes to patient outcomes
- To explore individual experiences of being the recipient of nursing care
- To explore participant's views about what quality nursing care is and how it could be measured
- To attempt to organise the concepts discussed into categories to assist in development of a conceptual framework

Discuss issues of confidentiality and the right of each individual to withdraw from the group at any point without penalty and the right not to respond to any question. Also discuss process for setting group guidelines and explain the group interview consensus process.

Questions

1. Outline one positive and one negative aspect of the nursing care you received when a patient within a health care setting?

2. What contribution did nursing care and nurses make to the outcome of your "patient experience"?
Potential prompts:
→ What impact did nursing care have on your recovery?
→ You may wish to consider positive and negative aspects of your care experience
→ Were their any unique or specific nursing experiences that had an impact on your care or the outcome of your care?

3. What would you describe as high quality nursing care?

4. Are there any aspects of nursing care that we can measure?
Potential prompts:
→ What are they?
→ When could they be measured?
(Use whiteboard to capture these)

5. The facilitator will summarise the discussion so far and ask participants to categorise concepts discussed into headings.

This will begin with conceptual theming and linking similar concepts together on the whiteboard. The facilitator will assist participants to create headings for concepts and use consensus agreement of participants to identify the headings.

Once this has been achieved, the facilitator will ask the following questions:
Do these headings capture the elements of nursing care that are important in measuring the outcomes of nursing practice?
Potential prompts:

→ Is it balanced (positive and negative outcomes included)?
→ Is it person-centred?
→ What if anything is missing?

6. Are there any other comments?

During the group interview the facilitator will use a whiteboard to compile information from participants. This will assist in ensuring that the interpretation of opinions/ideas is correct. The group interview will be tape recorded to facilitate analysis of themes.

Conclusion: At the conclusion of the group interview the facilitator will debrief the group and provide feedback.

APPENDIX 7: PARTICIPANT INFORMATION SHEET (EXPERT NURSE INTERVIEWS)

University of Wollongong

Participant Information Sheet for Expert Nurse Interview

Nursing sensitive outcome measures: seeking consensus on their importance and potential usefulness for evaluating nursing practice

Researcher: Mrs Jenny Sim
Supervisors: Professor Patrick Crookes & Professor Kenneth Walsh

Dear Participant, Date

PURPOSE OF THE RESEARCH
This is an invitation to participate in a study conducted by researchers at the University of Wollongong. The purpose of the research is to broaden the debate on nursing sensitive outcomes so that the holistic contribution that nursing care makes to patient outcomes is identified and measured. This will involve the development of a conceptual framework that describes nursing outcomes from a balanced and person-centred focus. Consensus agreement on a list of nursing sensitive indicators will be sought. These indicators will be ranked by importance and potential usefulness by nurses in public and private sector health care organisations using a modified Delphi survey within Phase 2 of this research project.

INVESTIGATORS

Mrs Jenny Sim	Prof Patrick Crookes	Prof Ken Walsh
Ph: 02 4429 1551	Ph: 02 4221 4208	Ph: 02 4221 3472
jennysim@uow.edu.au	patrick_crookes@uow.edu.au	kenw@uow.edu.au

METHOD AND DEMANDS ON PARTICIPANTS
If you choose to participate, you will be asked to take part in an interview that will be conducted via Skype by a member of the research team. This interview will be audio taped. During this interview you will be asked a series of question about your views on nursing sensitive outcome measures and the actual or potential contribution of nursing sensitive outcome measures in research & clinical practice. You will also be asked to identify what nursing sensitive outcome measures should be used and your views on how they should be collected. You will also be asked to provide your opinion on the most important nursing sensitive outcome measures. This discussion will facilitate development of a modified Delphi survey which will then be administered to a wide cross section of nurses in public and private sector health care organisations.

POSSIBLE RISKS, INCONVENIENCES AND DISCOMFORTS
Apart from a maximum of 1 hour of your time for the interview, we can foresee no risks for you. You will be contacted to identify a suitable time for the interview and asked to sign the consent form and return it to the researcher prior to conducting the Skype Interview. Your involvement in the study is voluntary and you may withdraw your participation from the study at any time. Refusal to participate in the study will not affect your relationship with the University of Wollongong.

FUNDING AND BENEFITS OF THE RESEARCH
This study is not funded by a research grant or any external body. Findings from the study will be used for completion of a research thesis, and will also be used in summary form for conference proceedings and journal publications. Your confidentiality is assured as no comments you make will be attributed to you and all data will be de-identified during transcription and securely stored.

ETHICS REVIEW AND COMPLAINTS
This study has been reviewed by the Human Research Ethics Committee of the University of Wollongong. If you have any concerns or complaints regarding the way this research has been conducted, you can contact the UoW Ethics Officer on (02) 4221 4457.

If you are interested in obtaining additional information about this research please contact me via email - jennysim@uow.edu.au

Kind Regards

Jenny Sim

APPENDIX 8: CONSENT FORM (EXPERT NURSE INTERVIEWS)

CONSENT FORM FOR EXPERT NURSE INTERVIEWS

Nursing sensitive outcome measures: seeking consensus on their importance and potential usefulness for evaluating nursing practice

Researcher: Mrs Jenny Sim
Supervisors: Professor Patrick Crookes & Professor Kenneth Walsh

I have been given information about the study 'nursing sensitive outcome measures: seeking consensus on their importance and potential usefulness for evaluating nursing practice'.

I have discussed the research project with Jenny Sim who is conducting this research as part of a Masters in Nursing (Research) degree supervised by Professor Patrick Crookes and Professor Kenneth Walsh in the School of Nursing, Midwifery and Indigenous Health at the University of Wollongong.

I understand that if I consent to participate in this project I will participate in an interview conducted via Skype.

I understand that the interview will be audio-recorded. I understand that my contribution will be confidential and that there will be no personal identification in the data that I agree to allow to be used in the study. Any personal identification within the audio recording will be removed during the transcription process.

I have been advised there are no anticipated risks to me as a participant and this research can be categorised as negligible risk research. I have had an opportunity to ask Jenny Sim any questions I may have about the research and my participation.

I understand that my participation in this research is voluntary, I am free to refuse to participate and I am free to withdraw from the research at any time. My refusal to participate or withdrawal of consent will not affect my relationship with the School of Nursing, Midwifery and Indigenous Health or my relationship with the University of Wollongong.

If I have any enquiries about the research, I can contact: Jenny Sim on 02 4429 1551 or Professor Patrick Crookes on 02 4221 4068 or if I have any concerns or complaints regarding the way the research is or has been conducted, I can contact the Ethics Officer, Human Research Ethics Committee, Office of Research, University of Wollongong on 02 4221 4457.

By signing below I am indicating my consent to participate in this research. I understand that the data collected from my participation will be used for completion of the research thesis, and will also be used in summary form for conference proceedings and journal publications, and I consent for it to be used in that manner.

Signed ..... Date ...../...../.....

Name (please print)

.....

APPENDIX 9: INTERVIEW GUIDELINE (EXPERT NURSE INTERVIEWS)

Expert Nurses Skype Interview script

Nursing sensitive outcome measures: seeking consensus on their importance and potential usefulness for evaluating nursing practice

Researcher: Mrs Jenny Sim
Supervisors: Professor Patrick Crookes & Professor Kenneth Walsh

Setting:
The interview will be conducted via Skype at a predetermined date and time.

Introduction:
The interviewer will initiate the Skype call, introduce themselves and the university and clearly state that the purpose of the interview is to ask the participant some questions about nursing sensitive outcome measures. The interviewer will ask the participant if they have read the participant information sheet and signed & returned the consent form. The interviewer will ask the participant if they still agree to participate in this research.

Following the introduction the researcher will provide an overview of the aims and objectives of the research as listed below.

Title - Nursing sensitive outcome measures: seeking consensus on the importance and potential usefulness for evaluating nursing practice

Aim - This research aims to broaden the debate on nursing sensitive outcomes so that the contribution that nursing care makes to patient outcomes is able to be identified and measured. This will involve the development of a conceptual framework that describes nursing outcomes from a balanced and person-centred focus.

Objectives
- To discuss the participants views on nursing sensitive outcomes
- To discuss the participants contribution to the development and use of nursing sensitive outcome measures in research and clinical practice contexts
- To identify the participant's views on what nursing sensitive outcome measures should be collected
- To identify the participant's views on how these nursing sensitive outcome measures should be collected

The interviewer will discuss confidentiality and the right of the individual to withdraw from the interview at any point without penalty and the right not to respond to any question. The interviewer will then ask the participant if they agree to continue to participate. If they agree the following list of questions will be asked. After each question participants will be asked if they are willing to proceed.

Questions
1. Why did you become interested in nursing sensitive outcome measures?
Prompt:
→ When did this interest begin?

2. Can you tell me about how nursing sensitive outcome measures are used in research and practice?
Potential prompt:
→ Ensure both research and practice contexts are explored
→ Explore the participants involvement in nursing sensitive outcome measures in research & practice contexts

3. How would you describe nursing sensitive outcome measures?
Potential prompt:
→ Explore requirement for linkage between nursing interventions and outcomes of interest
→ Potentially also explore dependent, interdependent & independent roles of the nurse

4. What nursing sensitive outcome measures do you think nurses should be using?

5. How should these nursing sensitive outcome measures be collected?

6. Are there any nursing sensitive outcome measures that we should not use?

7. If you were to collect a set of nursing sensitive outcome measures, what would they be?
Potential prompts:
→ Which particular nursing sensitive outcome measures 'must' be included?

8. What do you think are the implications for nurses and the nursing profession if we can not articulate and measure 'key' nursing sensitive outcome measures?

During the interview the interviewer will take notes, the interview will also be tape recorded and then transcribed. These strategies will ensure that the interpretation of opinions/ideas is correct.

Conclusion:
At conclusion of the interview the interviewer will thank the participant and terminate the Skype call.

APPENDIX 10: PARTICIPANT INFORMATION SHEET (MODIFIED DELPHI SURVEY)

University of Wollongong

Participant Information Sheet for Modified Delphi Survey

Nursing sensitive outcome measures: seeking consensus on their importance and potential usefulness for evaluating nursing practice

Researcher: Mrs Jenny Sim
Supervisors: Professor Patrick Crookes & Professor Kenneth Walsh

Dear Participant, Date

PURPOSE OF THE RESEARCH
This is an invitation to participate in a study conducted by researchers at the University of Wollongong. The purpose of the research is to broaden the debate on nursing sensitive outcomes so that the holistic contribution that nursing care makes to patient outcomes is identified and measured. This will involve the development of a conceptual framework that describes nursing outcomes from a holistic and person-centred focus. Consensus agreement on a list of nursing sensitive indicators will be sought. These indicators will be ranked by importance and potential usefulness by nurses in public and private sector health care organisations using a modified Delphi survey.

INVESTIGATORS

Mrs Jenny Sim	Prof Patrick Crookes	Prof Kenneth Walsh
Ph: 02 4429 1551	Ph: 02 4221 4847	Ph: 02 4221 3472
jennysim@uow.edu.au	patrick_crookes@uow.edu.au	kenw@uow.edu.au

METHOD AND DEMANDS ON PARTICIPANTS
If you choose to participate, you will be contacted by email at least 3 times. You will be asked to complete an electronic survey each time you are contacted. The purpose of the surveys is to gain consensus agreement on a topic and you will be asked initially for your opinions on the topic and then to quantify your level of agreement on statements provided in the survey. This process will be repeated up to a maximum of 4 times and will take approximately 20 minutes each time.

POSSIBLE RISKS, INCONVENIENCES AND DISCOMFORTS
Apart from the time it will take you to respond to the survey, we can foresee no risks for you. Your involvement in the study is voluntary and you may withdraw your participation from the study at any time, however any data that you provide will be used to form a consensus view and can not be withdrawn after a survey has been submitted. If you do not respond to a survey following notification by email of its availability, you will be sent a maximum of two email reminders to complete the survey. If you choose to withdraw from the research please email the researcher (jennysim@uow.edu.au) so that you will no longer be contacted by the research team. Refusal to participate or withdrawal from the study will not affect your relationship with the University of Wollongong.

FUNDING AND BENEFITS OF THE RESEARCH
This study is not funded by a research grant or any external body. Findings from the study will be used for completion of a research thesis, and will also be used in summary form for conference proceedings and journal publications. Your confidentiality is assured as no comments you make will be attributed to you and all data will be de-identified during transcription and securely stored.

ETHICS REVIEW AND COMPLAINTS
This study has been reviewed by the Human Research Ethics Committee of the University of Wollongong. If you have any concerns or complaints regarding the way this research has been conducted, you can contact the UoW Ethics Officer on (02) 4221 4457.

If you are interested in obtaining additional information about this research please contact me via email - jennysim@uow.edu.au

Kind Regards

Jenny Sim

APPENDIX 11: ROUND 1 MODIFIED DELPHI SURVEY QUESTIONNAIRE

Delphi Round 1

Dear Participant

The University of Wollongong is conducting a research project on the outcomes of nursing work. The research project aims to identify and measure the contribution that nursing care makes to patient outcomes.

This research will be carried out using a modified Delphi technique consisting of up to 4 surveys (known as rounds) aiming to achieve consensus. Each survey will be completed via a link to an online form, within an email message that will be sent to you.

The amount of time necessary for completion of each survey (or round) will vary with each participant, but should range from 10 to 20 minutes for most participants for all rounds of the project. There are no right or wrong answers to the questions. This study is seeking your opinion. We think that you will find the process interesting and results will be made available to you at the conclusion of the study.

Your involvement in this research is completely volountary, and you may discontinue your participation at any time. If you choose to withdraw from the research please email the researcher (jennysim@uow.edu.au) so that you will no longer be contacted by the research team. Refusal to participate or withdrawal from the study will not affect your relationship with the University of Wollongong.

This research has been reviewed by the Human Research Ethics Committee of the University of Wollongong and the SESIAHS. If you have any concerns or complaints regarding the way this research has been conducted, you can contact the UOW Ethics Officer on (02) 42214457.

If you have any other queries about this project, or would like any further information you can contact Mrs Jenny Sim on (02) 44291551 or jennysim@uow.edu.au.

***1. I have been provided with information about this project and agree to participate in this research. I understand that I can withdraw from the project at any time and my participation is completely voluntary.**

- ◯ Yes
- ◯ No

Page 1

Delphi Round 1

Instructions on how to complete modified Delphi round 1

The first round of this modified Delphi survey will ask you to complete some demographic information. This is contained on the next few pages.

You will then be asked to rate the importance of several concepts using a rating scale of:
Very important
Important
Neither important or not important
Not important
Totally unimportant

These initial concepts of how we could measure the outcomes of nursing work have been developed from the existing literature and through interviews with nurses and healthcare consumers.

The initial concepts that are presented to you have been structured using a well known framework by Donabedian that explores structure, process and outcome measures.

Structure, process & outcome measures are all considered important indicators of quality nursing care. They have been included because quality nursing outcomes are more likely to be realised if certain structural arrangements are in place and if processes of care meet recognised quality standards. Structure and process measures are also used to help analyse patient outcomes.

Please answer all questions as best you can. There are no right or wrong answers. At this stage of the research project we are seeking your opinions on whether these concepts are IMPORTANT and provide you with opportunities to add concepts if you feel something is missing.

Delphi Round 1

Demographic information - employment

2. Mark the box that best describes your position title.

- ☐ AIN (Assistant in Nursing)
- ☐ EN / EEN (Enrolled Nurse / Endorsed Enrolled Nurse)
- ☐ RN (Registered Nurse)
- ☐ CNS (Clinical Nurse Specialist)
- ☐ CNE (Clinical Nurse Educator)
- ☐ CNC (Clinical Nurse Consultant)
- ☐ NUM (Nurse Unit Manager)
- ☐ NP (Nurse Practitioner)
- ☐ NE (Nurse Educator)
- ☐ NM (Nurse Manager)
- ☐ DON (Director of Nursing)

3. Indicate the type of organisation in which you primarily work.

- ☐ Public hospital / healthcare organisation
- ☐ Private hospital / healthcare organisation

4. Describe the specialty area of the ward / department in which you primarily work

Page 3

Delphi Round 1

Demographic information - background

5. Are you ....

- ◯ Male
- ◯ Female

6. What age are you?

◯ 18-24	◯ 35-44	◯ 55-65
◯ 25-34	◯ 45-54	◯ Over 65

7. Please indicate how many years experience since your initial qualification as a nurse

◯ 0-1	◯ 6-9	◯ 20-24
◯ 2-3	◯ 10-14	◯ 25-30
◯ 4-5	◯ 15-19	◯ Over 30

8. If applicable, please list your qualifications

Page 4

Delphi Round 1

Nursing sensitive outcomes - structural measures

Structural measures include organisational aspects of health care and the attributes of the settings in which nursing care occurs. Structural measures have been subdivided into:
- patient characteristics
- nurse characteristics
- organisational characteristics

This page explores PATIENT CHARACTERISTICS at an individual and group / ward level

9. Please indicate whether these concepts are IMPORTANT when evaluating the outcomes of nursing work.

	Very important	Important	Neither important or not important	Not important	Totally Unimportant
Patient acuity	○	○	○	○	○
Diagnosis / Diagnosis Related Group (DRG)	○	○	○	○	○
Casemix information	○	○	○	○	○
Ward / department type	○	○	○	○	○
Patient turnover	○	○	○	○	○
Numbers of referrals	○	○	○	○	○

10. Are there any other patient characteristics that are IMPORTANT when evaluating the outcomes of nursing care?

Page 5

Delphi Round 1

Nursing sensitive outcomes - structural measures

This page explores NURSE CHARACTERISTICS at an individual and department / ward level

11. Please indicate whether these concepts are IMPORTANT when evaluating the outcomes of nursing work.

	Very important	Important	Neither important or not important	Not important	Totally unimportant
Hours of available nursing care	○	○	○	○	○
Skill mix of nursing staff	○	○	○	○	○
Education of nursing staff	○	○	○	○	○
Experience of nursing staff	○	○	○	○	○
Number of casual staff	○	○	○	○	○
Number of agency staff	○	○	○	○	○

12. Are there any other nurse characteristics that are IMPORTANT when evaluating the outcomes of nursing work?

Page 6

Delphi Round 1

Nursing sensitive outcomes - structural measures

This page explores ORGANISATIONAL CHARACTERISTICS at a department / ward level

13. Please indicate whether these concepts are IMPORTANT when evaluating the outcomes of nursing work.

	Very important	Important	Neither important or not important	Not important	Totally unimportant
Type of organisation	○	○	○	○	○
Model of care in use	○	○	○	○	○
Nursing work environment	○	○	○	○	○
Management support	○	○	○	○	○
Relationships with nursing colleagues	○	○	○	○	○
Relationships with other health professionals	○	○	○	○	○

14. Are there any other organisational characteristics that are IMPORTANT when evaluating the outcomes of nursing work?

Page 7

Delphi Round 1

Nursing sensitive outcomes - process measures

Process measures reflect the actions of nurses within organisations (i.e. what is done in giving and receiving nursing care).

Process measures may be based on recommended actions in clinical guidelines, professional experience or scientific literature.

This page explores PATIENT PERCEPTIONS of the nursing care they receive

15. Please indicate whether these concepts are IMPORTANT when evaluating the process of nursing care.

	Very important	Important	Neither important or not important	Not important	Totally unimportant
Patient/client perceptions of care	○	○	○	○	○
Patient/client perception of feeling "safe"	○	○	○	○	○
Patient/client perception of feeling "cared for"	○	○	○	○	○
Patient/client perception of being involved in decision making	○	○	○	○	○

16. Are there any other patient perceptions of nursing care characteristics that are IMPORTANT when evaluating the process of nursing work?

Page 8

Delphi Round 1

Nursing sensitive outcomes - process measures

This page explores a range of concepts related to the PROCESSES of nursing care

17. Please indicate whether these concepts are IMPORTANT when evaluating the process of nursing care.

	Very important	Important	Neither important or not important	Not important	Totally unimportant
Risk management strategies	○	○	○	○	○
Presence of a safety culture	○	○	○	○	○
Falls prevention strategies	○	○	○	○	○
Pressure ulcer prevention strategies	○	○	○	○	○
Processes for safe administration of medications	○	○	○	○	○
Hand hygiene practices	○	○	○	○	○
Presence of collaboration between healthcare professionals	○	○	○	○	○
Presence of teamwork	○	○	○	○	○
Presence of caring attitudes and actions	○	○	○	○	○
A person-centred approach to care	○	○	○	○	○

18. Are there any other concepts that are IMPORTANT when evaluating the process of nursing work?

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Delphi Round 1

Nursing sensitive outcomes - patient outcomes

Outcome measures describe the results or the effects of nursing care on the health of patients or clients. The next few pages explore safety outcomes, patient perceptions of care & quality of care outcomes

This page explores SAFETY OUTCOMES at an individual and group / ward level

19. Please indicate whether these concepts are IMPORTANT when evaluating the outcomes of nursing work.

	Very important	Important	Neither important or not important	Not important	Totally unimportant
Number of patient / client falls	○	○	○	○	○
Number of falls with injury	○	○	○	○	○
Pressure ulcer prevalence	○	○	○	○	○
Hospital acquired pressure ulcers	○	○	○	○	○
Medication errors	○	○	○	○	○
Hospital acquired infections	○	○	○	○	○
Central line associated blood stream infections	○	○	○	○	○
Peripheral IV associated blood stream infections	○	○	○	○	○
Failure to rescue	○	○	○	○	○
Mortality rates	○	○	○	○	○

20. Are there any other safety outcomes that are IMPORTANT when evaluating the outcomes of nursing work?

Page 10

Delphi Round 1

Nursing sensitive outcomes - patient outcomes

This page explores PATIENT PERCEPTIONS / SATISFACTION wirth the outcomes of their care

21. Please indicate whether these concepts are IMPORTANT when evaluating the outcomes of nursing work.

	Very important	Important	Neither important or not important	Not important	Totally unimportant
Patient perception of nursing care	○	○	○	○	○
Overall satisfaction with nursing care	○	○	○	○	○
Patient satisfaction with planning for discharge	○	○	○	○	○
Patient satisfaction with pain management	○	○	○	○	○
Patient satisfaction with education from nurses	○	○	○	○	○
Patient satisfaction with individual focus of care	○	○	○	○	○

22. Are there any other patient perceptions of nursing care that are IMPORTANT when evaluating the outcomes of nursing work?

Page 11

Delphi Round 1

Nursing sensitive outcomes - patient outcome measures

This page explores QUALITY OF CARE INDICATORS at an individual and group / ward level

23. Please indicate whether these concepts are IMPORTANT when evaluating the outcomes of nursing work.

	Very important	Important	Neither important or not important	Not important	Totally unimportant
Improvements to functional status	○	○	○	○	○
Improved quality of life	○	○	○	○	○
Reduction / relief of symptoms	○	○	○	○	○
Patient / client participation in self-care	○	○	○	○	○
Patient understanding of disease processes	○	○	○	○	○
Chronic disease management strategies in place and understood	○	○	○	○	○
Timely and successful referral to other health professionals	○	○	○	○	○
Successful discharge	○	○	○	○	○

24. Are there any other quality of care outcome measures that are IMPORTANT when evaluating the outcomes of nursing work?

Page 12

Delphi Round 1

Thank you

Thank you for completing this survey.

Once the results of this survey are analysed you will be asked to complete another survey. You will be notified when the next survey is available by email.

25. If you have any additional comments to make about the research project or measuring the outcomes of nursing work please take the time to document them and the research team will contact you directly.

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APPENDIX 12: ROUND 2 MODIFIED DELPHI SURVEY QUESTIONNAIRE

Delphi Round 2 Survey

Introduction

Dear Participant

Thank you for completing the first survey of this research project. A summary of the results for the first survey was located within a link in the email invitation related to this survey. Please take some time to review those results.

196 participants completed the first survey and high levels of consensus agreement were reached in all but one of the items presented in the round 1 survey. This item will be relabelled and presented to you again for ranking as part of this survey.

You will find instructions for completing this round 2 survey on the next page. This survey takes the same structure as the first round of the survey.

Your involvement in this research is completely volountary, and you may discontinue your participation at any time. If you choose to withdraw from the research please email the researcher (jennysim@uow.edu.au) so that you will no longer be contacted by the research team. Refusal to participate or withdrawal from the study will not affect your relationship with the University of Wollongong.

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If you have any other queries about this project, or would like any further information you can contact Mrs Jenny Sim on (02) 44291551 or jennysim@uow.edu.au.

Delphi Round 2 Survey

Instructions

The second round of this modified Delphi survey has been developed based upon the written feedback you provided in Round 1. Your responses have been analysed and similar responses are grouped together to ensure the survey is not repetitive and that is can be completed easily.

You will be asked to rate the importance of each of these concepts using a rating scale of:
- Very important
- Important
- Neither important or not important
- Not important
- Totally unimportant

There is one item that is being presented to you again from Round 1 because it did not reach consensus. All other items are based upon your feedback from Round 1.

All of the concepts that are presented to you have been structured using the same framework used in Round 1. The framework by Donabedian is a well known framework that explores structure, process and outcome measures.

Please answer all questions as best you can. There are no right or wrong answers. At this stage of the research project we are seeking your opinions on whether these concepts are IMPORTANT.

Delphi Round 2 Survey

Round 1 items that did not reach consensus

All but one (1) item presented within the Round 1 survey reached consensus agreement on its importance.

The item that did not reach consensus was a Structural measure - Number of referrals.

This item has been renamed CASELOAD and relates to the expected workload of a nurse in either a community, outpatient or hospital setting.

1. Please indicate whether this concept is IMPORTANT when evaluating the outcomes of nursing work.

	Very important	Important	Neither important or not important	Not important	Totally unimportant
Caseload	○	○	○	○	○

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Delphi Round 2 Survey

Structural measures - Patient characteristics

Structural measures include organisational aspects of health care and the attributes of the settings in which nursing care occurs.

This page explores PATIENT CHARACTERISTICS at an individual and group / ward level.

2. Please indicate whether these concepts are IMPORTANT when evaluating the outcomes of nursing work

	Very important	Important	Neither important or not important	Not important	Totally unimportant
Patient age	○	○	○	○	○
Patient's cultural background and / or language spoken at home	○	○	○	○	○
Family involvement in care	○	○	○	○	○
Pre-admission quality of life	○	○	○	○	○
Pre-admission level of independence / dependence	○	○	○	○	○
Cognitive status of patient	○	○	○	○	○
Patient expectations regarding healthcare intervention	○	○	○	○	○
Patient's willingness to participate in care	○	○	○	○	○
Presentation to hospital e.g. emergency, elective	○	○	○	○	○

Delphi Round 2 Survey

Structural measures - Nurse characteristics

Structural measures include organisational aspects of health care and the attributes of the settings in which nursing care occurs.

This page explores NURSE CHARACTERISTICS at an individual and department / ward level.

3. Please indicate whether these concepts are IMPORTANT when evaluating the outcomes of nursing work

	Very important	Important	Neither important or not important	Not important	Totally unimportant
Nursing overtime worked	○	○	○	○	○
Nurse to patient ratio	○	○	○	○	○
Competency of staff	○	○	○	○	○
Staff turnover (e.g. Resignations and recruitment)	○	○	○	○	○
Leadership of unit	○	○	○	○	○
Well-being of nursing staff	○	○	○	○	○
Nursing culture	○	○	○	○	○
Staff cultural and language background	○	○	○	○	○
Physical fitness of nursing staff	○	○	○	○	○

Delphi Round 2 Survey

Structural measures - Organisational characteristics

Structural measures include organisational aspects of health care and the attributes of the settings in which nursing care occurs.

This page explores ORGANISATIONAL CHARACTERISTICS at a department / ward level and at a whole of organisation level.

4. Please indicate whether these concepts are IMPORTANT when evaluating the outcomes of nursing work

	Very important	Important	Neither important or not important	Not important	Totally unimportant
Organisational culture	○	○	○	○	○
Organisational commitment to providing best practice	○	○	○	○	○
Organisational commitment to person-centred care	○	○	○	○	○
Utilisation of evidence based practice within organisation	○	○	○	○	○
Affiliation with research / academic unit	○	○	○	○	○
Presence / availability of members of the multidisciplinary team	○	○	○	○	○
Presence / availability of auxiliary staff in unit	○	○	○	○	○
Presence / availability of after-hours education and support	○	○	○	○	○
Management experience & qualifications	○	○	○	○	○

Delphi Round 2 Survey

Process measures

Process measures reflect the actions of nurses within organisations (i.e. what is done in giving & receiving nursing care). Process measures may be based on recommended actions in clinical guidelines, professional experience or scientific literature.

This page explores PATIENT PERCEPTIONS of the nursing care they receive.

5. Please indicate whether these concepts are IMPORTANT when evaluating the process of nursing care.

	Very important	Important	Neither important or not important	Not important	Totally unimportant
Patient perception that care is appropriate / best practice	○	○	○	○	○
Patient perception of communication with nurses	○	○	○	○	○
Patient perceptions of "being heard"	○	○	○	○	○
Patient perception of "being informed" about nursing care	○	○	○	○	○
Patient perception of trust in nurses	○	○	○	○	○
Family perception of being involved in decision making (where relevant)	○	○	○	○	○

Delphi Round 2 Survey

Process measures

This page explores a range of concepts related to the PROCESSES of nursing care.

6. Please indicate whether these concepts are IMPORTANT when evaluating the process of nursing care.

	Very important	Important	Neither important or not important	Not important	Totally unimportant
Continuity of care provided to patient	○	○	○	○	○
Communication processes within unit (e.g. handover)	○	○	○	○	○
Documentation of nursing assessment within the medical record	○	○	○	○	○
Documentation of nursing care within the medical record	○	○	○	○	○
Documentation of comprehensive physical and mental health assessment	○	○	○	○	○
Delirium prevention strategies	○	○	○	○	○

Delphi Round 2 Survey

Outcome measures

Outcome measures describe the results or the effects of nursing care on the health of patients or clients.

This page explores SAFETY OUTCOMES and QUALITY OF CARE indicators at an individual and group / ward level.

7. Please indicate whether these concepts are IMPORTANT when evaluating the outcomes of nursing work.

	Very important	Important	Neither important or not important	Not important	Totally unimportant
Incidence of delirium post admission	○	○	○	○	○
Incidence of self harm post admission	○	○	○	○	○
Unplanned readmissions	○	○	○	○	○
Number of clinical incidents / near misses	○	○	○	○	○
Length of stay	○	○	○	○	○
Patient education about discharge medications	○	○	○	○	○

Delphi Round 2 Survey

Outcome measures

This page explores PATIENT PERCEPTIONS / SATISFACTION with the outcomes of their care.

8. Please indicate whether these concepts are IMPORTANT when evaluating the outcomes of nursing work.

	Very important	Important	Neither important or not important	Not important	Totally unimportant
Patient perception of whether their expectations of their healthcare intervention have been met	○	○	○	○	○
Patient satisfaction related to communication with nurses	○	○	○	○	○
Patient satisfaction with management of incidents and / or complaints	○	○	○	○	○
Patient satisfaction with support provided to family / carers	○	○	○	○	○
Patient satisfaction with cultural awareness of nursing staff	○	○	○	○	○
Family satisfaction with involvement in care (where relevant)	○	○	○	○	○
Family satisfaction with information provided by nursing staff (where relevant)	○	○	○	○	○

Delphi Round 2 Survey

Thank you

Thank you for completing this survey.

Once the results of this survey are analysed you will be asked to complete another survey. You will be notified when the next survey is available by email.

9. If you have any additional comments to make about the research project or measuring the outcomes of nursing work please take the time to document them here. These comments will be used to inform the next phase of the research project.

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APPENDIX 13: ROUND 3 MODIFIED DELPHI SURVEY QUESTIONNAIRE

Delphi Round 3

Introduction and background

Dear Participant

Thank you for being a participant in the first phases of this research project. A summary of the results for the first and second surveys were located within a link in the email invitation related to this survey. Please take some time to review those results.

196 participants completed the first survey and high levels of consensus agreement were reached in all but one of the items presented in the round 1 survey. This item was relabelled and presented to you again for ranking as part of the second survey. That item reached consensus.

169 participants completed the second round survey. There were 51 items presented in the second round survey that were identified by participants in round 1. 46 of the items from round 2 reached consensus (5 items did not reach consensus).

At the end of Round 2 of this project, a total of 101 items have reached consensus agreement by more than 75% of participants, as either important or very important in measuring nursing work.

The next phase of this research involves identifying categories which could be used to group these concepts. The aim of this process is to identify and describe a conceptual framework that could be used to measure the outcome of nursing work.

You will find instructions for completing this round 3 survey on the next page. This survey takes a different structure to previous rounds of the survey.

Your involvement in this research is completely volountary, and you may discontinue your participation at any time. If you choose to withdraw from the research please email the researcher (jennysim@uow.edu.au) so that you will no longer be contacted by the research team. Refusal to participate or withdrawal from the study will not affect your relationship with the University of Wollongong.

This research has been reviewed by the Human Research Ethics Committee of the University of Wollongong and the SESIAHS. If you have any concerns or complaints regarding the way this research has been conducted, you can contact the UOW Ethics Officer on (02) 42214457.

If you have any other queries about this project, or would like any further information you can contact Mrs Jenny Sim on (02) 44291551 or jennysim@uow.edu.au.

***1. Please indicate which rounds of the survey you have completed (please mark all relevant boxes). Please only complete the remainder of this survey if you participated in Round 1 and round 2 of previous surveys.**

☐ Round 1

☐ Round 2

Page 1

Delphi Round 3

Instructions

The third round of this modified Delphi survey has been developed following analysis of Round 1 and Round 2 of this project. Based upon the ranking of items in these rounds, and previous work undertaken within this project, the research team has attempted to identify broad themes that could be used to group together similar items and concepts.

The aim of this process is to identify a conceptual framework that can be used to measure nursing care in a holistic way.

In this survey you will be asked to group concepts together and provide feedback on how concepts relate to each other. All concepts presented in this survey are from rounds 1 and 2 of this research project.

You will be given information about a category of concepts and you will then be asked whether you agree or disagree with the grouping of individual items into that category. You will be asked to identify an alternate category if you do not feel that an item fits into the category it is presented with. There are also free text fields to provide feedback on alternate categories and make suggestions about the names of categories.

Please answer all questions as best you can. There are no right or wrong answers. We are seeking your feedback on whether these concepts can be grouped together.

Delphi Round 3

Care and caring

A theme called "Care and caring" has been identified. This theme incorporates the individual items listed below and includes items that relate to the fundamentals of nursing care and caring.

2. Please indicate whether each of these items fit with the category of "Care and caring"

	Yes / No	Potential other category
Presence of caring attitudes and actions		
Patient / client perceptions of care		
Patient / client perception of feeling "cared for"		
A person centred approach to care		
Overall satisfaction with nursing care		
Patient perception of nursing care		
Patient satisfaction with individual focus of care		
Patient perception of whether their expectation of their health care intervention have been met		
Patient satisfaction with pain management		
Patient satisfaction with education from nurses		
Patient understanding of disease process		
Patient satisfaction with support provided to family / carers		
Family satisfaction with involvement in care (where relevant)		
Patient / client participation in self care		
Improved quality of life		
Reduction / relief of symptoms		
Improvements to functional status		

Please provide details if you indicated other within any of the boxes above

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Delphi Round 3

3. Does the category name of "Care and caring" adequately summarise these elements? Please provide suggestions if you can identify a better theme name.

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Delphi Round 3

Communication

A theme called "Communication" has been identified. This theme incorporates the individual items listed below and includes items that relate to communicating with patients / clients and their family and / or carers.

4. Please indicate whether each of these items fit with the category of "Communication"

	Yes / No	Potential other category
Patient / client perception of being involved in decision making	☐	☐
Patient / client perception of communication with nurses	☐	☐
Patient / client perception of "being informed" about nursing care	☐	☐
Patient / client perception of "being heard"	☐	☐
Patient perception of trust in nurses	☐	☐
Family perception of being involved in decision making (where relevant)	☐	☐
Patient satisfaction related to communication with nurses	☐	☐
Family satisfaction with information provided by nursing staff (where relevant)	☐	☐
Patient satisfaction with management of incidents and / or complaints	☐	☐
Patient satisfaction with cultural awareness of nursing staff	☐	☐
Documentation of comprehensive physical and mental health assessment	☐	☐
Documentation of nursing care within medical record	☐	☐
Documentation of nursing assessment within medical record	☐	☐

Please provide details if you indicated other within any of the boxes above

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Delphi Round 3

5. Does the category name of "Communication" adequately summarise these elements? Please provide suggestions if you can identify a better theme name.

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Delphi Round 3

Collaboration

A theme called "Collaboration" has been identified. This theme incorporates the individual items listed below and includes items that relate to collaboration amongst nurses and with other members of the health care team. This category also includes the items relating to planning for and successful discharge of patients / clients from the health care system.

6. Please indicate whether each of these items fit with the category of "Collaboration"

	Yes / No	Potential other category
Presence of collaboration between healthcare professionals		
Presence of teamwork		
Relationships with nursing colleagues		
Relationships with other health professionals		
Continuity of care provided to patient		
Communication processes within unit (e.g. handover)		
Timely and successful referral to other health professionals		
Patient satisfaction with planning for discharge		
Chronic disease management strategies in place and understood		
Patient education about discharge management		
Successful discharge		

Please provide details if you indicated other within any of the boxes above

7. Does the category name of "Collaboration" adequately summarise these elements? Please provide suggestions if you can identify a better theme name.

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Delphi Round 3

Safety

A theme called "Safety" has been identified. This theme incorporates the individual items listed below and includes items that relate to safety.

8. Please indicate whether each of these items fit with the category of "Safety"

	Yes / No	Potential other category
Patient / client perception of feeling "safe"		
Patient perception that care is appropriate / best practice		
Processes for safe administration of medications		
Medication errors		
Hand hygiene practices		
Hospital acquired infections		
Central line associated blood stream infections		
Peripheral IV associated blood stream infections		
Falls prevention strategies		
Number of falls with injury		
Number of patient / client falls		
Risk management strategies		
Pressure ulcer prevention strategies		
Pressure ulcer prevalence		
Hospital acquired pressure ulcers		
Delirium prevention strategies		
Presence of a safety culture		
Failure to rescue		
Mortality rates		
Unplanned readmissions		
Length of stay		
Number of clinical incidents / near misses		

Please provide details if you indicated other within any of the boxes above

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Delphi Round 3

9. Does the category name of "Safety" adequately summarise these elements? Please provide suggestions if you can identify a better theme name.

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Delphi Round 3

Workload

A theme called "Workload" has been identified. This theme incorporates the individual items listed below and includes items that relate to patient acuity / complexity and the nursing resources available to care for those patients.

10. Please indicate whether each of these items fit with the category of "Workload"

	Yes / No	Potential other category
Patient acuity		
Diagnosis / Diagnosis Related Group (DRG)		
Casemix information		
Ward / department type		
Patient turnover		
Caseload		
Hours of available nursing care		
Nurse to patient ratio		

Please provide details if you indicated other within any of the boxes above

11. Does the category name of "Workload" adequately summarise these elements? Please provide suggestions if you can identify a better theme name.

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Delphi Round 3

Patient characteristics

A theme called "Patient characteristics" has been identified. This theme incorporates the individual items listed below and includes items that relate to patient's participation in care and also includes the patient's expectations of their healthcare experience.

12. Please indicate whether each of these items fit with the category of "Patient characteristics"

	Yes / No	Potential other category
Patient's willingness to participate in care		
Pre-admission level of independence / dependence		
Pre-admission quality of life		
Cognitive status of patient		
Family involvement in care		
Patient expectations of healthcare intervention		

Please provide details if you indicated other within any of the boxes above

13. Does the category name of "Patient characteristics" adequately summarise these elements? Please provide suggestions if you can identify a better theme name.

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Delphi Round 3

Nurses Work Environment

A theme called "Nurses work environment" has been identified. This theme incorporates the individual items listed below and includes items that relate to the nurses work environment including characteristics of the nursing workforce, nursing culture, leadership in the unit and fitness for practice.

14. Please indicate whether each of these items fit with the category of "Nurses work environment"

	Yes / No	Potential other category
Nursing work environment		
Skill mix of nursing staff		
Number of casual staff		
Number of agency staff		
Nursing overtime worked		
Staff turnover (e.g. resignations & recruitment)		
Education of nursing staff		
Experience of nursing staff		
Competency of staff		
Leadership of unit		
Well-being of nursing staff		
Nursing culture		
Physical fitness of nursing staff		
Presence / availability of members of the multi-disciplinary team		
Presence / availability of auxiliary staff in unit		

Please provide details if you indicated other within any of the boxes above

15. Does the category name of "Nurses work environment" adequately summarise these elements? Please provide suggestions if you can identify a better theme name.

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Delphi Round 3

Organisational Environment

A theme called "Organisational environment" has been identified. This theme incorporates the individual items listed below and includes items that relate to the organisational environment in which nursing care is taking place.

16. Please indicate whether each of these items fit with the category of "Organisational environment"

	Yes / No	Potential other category
Type of organisation		
Management support		
Management experience & qualifications		
Presence / availability of after-hours education & support		
Model of care in use		
Organisational commitment to providing best practice		
Organisational culture		
Organisational commitment to providing person centred care		
Utilisation of evidence based practice within organisation		

Please provide details if you indicated other within any of the boxes above

17. Does the category name of "Organisational environment" adequately summarise these elements? Please provide suggestions if you can identify a better theme name.

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