THE EFFECTS OF PATIENT AND NURSING UNIT CHARACTERISTICS ON OUTCOMES AMONG HOSPITALIZED PATIENTS WITH CHRONIC ILLNESS IN THAILAND

by

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Hospitalized Patients with Chronic Illness in Thailand
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SRIWAN MEEBOON: _________________________
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ABSTRACT

The purpose of this cross-sectional correlational study was to examine the effects of patient and nursing unit characteristics on nursing-sensitive patient outcomes. The conceptual framework for this study is generated from the Quality Health Outcomes Model. The patient characteristics were patient age, gender, education, duration of illness, severity of illness, and illness representation. The nursing unit characteristics were nurse experience, nurse staffing, nursing unit competency, and group cohesion. Nursing-sensitive patient outcomes were patient’s confidence in self-care and patient’s perception of being well-cared for.

Stratified sampling was employed to recruit a sample of 130 hospitalized chronically ill patients in 8 medical care units of 4 hospitals in Thailand. A face-to-face questionnaire interview was used to collect data from patients. A self-administered questionnaire was used to collect data from 90. Nurse staffing data were obtained from nursing administrative data for each unit. Multiple regression analyses were used to examine the relationships, test a mediator, and analyze the contextual effect of the study variables.

Severity of illness ($\beta = -.315, p < .01$) and illness representation ($\beta = -.234, p < .05$) were significant predictors of patient’s confidence in self-care, when controlling for nursing unit characteristics. Illness representation partially mediated the relationship between severity of illness and patient’s confidence in self-care. Nursing unit characteristics were not significant predictors of patient’s confidence in self-care, when controlling for patient characteristics. There was a significant individual effect on
patient’s confidence in self-care. Severity of illness ($r = -.199, p < .05$) and group cohesion ($r = -.195, p < .05$) were correlated with patient’s perception of being well-cared for.

The findings of this study reinforce the need for acute care nurses to be aware of how chronically ill patients perceive health threats since illness representation directly affects patient’s confidence in self-care. Through understanding the role of illness representation as a mediator between severity of illness and confidence in self-care, it is suggested that nurses can improve patient’s confidence in self-care in severely ill patients by providing nursing interventions that promote positive illness representation.
CHAPTER 1: INTRODUCTION

The purpose of this study is to explore the contribution of patient and nursing unit characteristics on patient outcomes in Thailand, particularly outcomes that are recognized as appropriate for chronically ill patients receiving health services from medical care units in acute care hospitals. These outcomes are patient’s confidence in self-care and patient’s perception of being well-cared for. The factors that are hypothesized to affect these outcomes are (a) patient characteristics including age, gender, level of education, duration and severity of illness, and illness representation, and (b) nursing unit characteristics including nurses’ level of education and experience, nurse staffing, nursing unit competency, and group cohesion. This investigation is based on a nursing system model, a cognitive behavioral model, and literature review on patient outcomes and quality of care. This chapter presents the background and problems in the study of nursing-sensitive patient outcomes, purpose of the study, research questions, and significance of this study.

Background

Health Care System in Thailand

Health services in Thailand are classified into 5 levels according to the level of care. First, self-care at the family level is the enhancement of people’s capacity to provide self-care and make decisions about health. Second, the primary health care level is the services organized by the community to provide health promotion, disease prevention, curative care and rehabilitative care. Service providers are village health volunteers or other non-governmental volunteers. Third, the primary care level is provided by health
personnel and general practitioners. Since 2002, primary care units (PCU) have been established to provide basic or primary care to the people as well as referral systems to higher-levels of health care facilities. Fourth, the secondary care level is managed by medical and health personnel with an intermediate level of specialization. These institutes are community hospitals, general or regional hospitals and other large public hospitals, and private hospitals. Last, tertiary care is the medical and health services that are provided by medical specialists and health professionals. These institutes are general hospitals, regional hospitals, university hospitals and large private hospitals. However, some of these institutes provide primary care services as well (Ministry of Public Health, Thailand [MOPH], 2004a).

The health care system in Thailand is based on the conceptual framework of the National Health Development Plan under the 9th National Economic and Social Development Plan (2002-2006). This framework focuses on the concept of “human-centered” developmental approach. Conceptually, under the 9th plan, “health” is regarded as the state of physical, mental, social and spiritual well-being that is interrelated holistically. The objectives of the 9th Health Development Plan are (a) to create a proactive health system aimed at promoting people’s health status, (b) to create a secure system for protecting people’s health from negative impacts and to create an insurance system for the people to have access to quality health care with universal coverage on an equitable basis, (c) to strengthen individuals, families, communities, and society to have the potential for self-care and health promotion, and (d) to set up mechanisms and measures for creating, seeking, and increasing the potential for screening knowledge and
technology for health development (MOPH, 2004b). Therefore, the development of an entire system that is linked to several other elements, e.g. individual, environmental, and the health service system to improve people’s health status is the current focus of Thai health service system.

The Ministry of Public Health is the principle agency responsible for the promotion, support, control, and coordination of all physical and mental health activities, and the provision of health services so that Thai people will be healthy and live a long life, without premature death. In 2004, a universal health care scheme was expanded to cover 94.3% of the entire population (MOPH, 2004b).

It is recognized that management in public hospitals is highly centralized. The staffing pattern, staff payment and many other manpower management practices are all determined by central government agencies. Hospital performance assessment is hardly implemented except through routine supervision and the reporting system. Therefore, accountability and responsiveness to the patients is inadequate (MOPH, 2004c).

**Current Health Service Climate**

Changes in the hospital environment affect nursing operations at the unit level, and alter care processes and the occurrence of adverse events (Boyle, 2004). Examples of changes currently include (a) the increasing number of chronically ill patients, (b) increased acuity of patients admitted to the hospital with abbreviated lengths of stay, and (c) more emphasis on quality and safe care. These changes require nurses who are working in the acute care setting to make adjustments and also sharpen their technical
skills (American Nurses Association [ANA], 1996). Importantly, these changes affect the processes of nursing care delivery systems, which in turn influence patient outcomes.

**Increasing Number of Chronically Ill Patients**

Both the number and proportion of older persons are growing in virtually all countries, and worldwide trends are likely to continue unabated (World Health Organization, 2005). The increasing number of older people is associated with an increasing number of chronically ill patients. The National Center for Chronic Disease Prevention and Health Promotion: CDC (2004) reports that every year chronic diseases claim the lives of more than 1.7 million Americans. Although medical and pharmacological advances have made it possible for a growing number of people to live longer, chronic diseases cause major limitations in daily living for more than 1 of every 10 Americans, or 25 million people (Centers for Disease Control and Prevention, 2004). Generally, it is found in hospitals that aging patients overwhelmed with chronic illnesses are filling hospital beds, and there are not enough nurses to take care of them (Gordon, 2005).

In Thailand, the number of chronically ill patients is gradually increasing as well. It was reported that chronically ill patients consumed a vast majority of health care services, such as acute care services and home care. For example, the numbers of patients with hypertension dramatically increased. Annually the number of patients admitted to general hospitals from 2000 to 2003 was 142,873, 156,442, 177,994, and 218, 218 respectively (MOPH, 2004d).
Living with chronic illness requires that individuals cope with their illnesses to allow them to function in daily life. Patients with chronic illness face a variety of needs, demands, and discomforts as they attempt to maintain quality of life. Moreover, they still need care from health care providers when their illnesses are aggravated. Effective management of chronic illness requires timely, appropriate, and supportive clinical care for optimal outcomes (Cumbie, Conley, & Burman, 2004). The World Health Organization pointed out that the lack of tools and expertise of health care workers in acute care caring for chronic health problems leads to problems in health care systems (Cumbie et al., 2004).

In general, acute care hospitals emphasize acute care, which may contribute to ineffective self-management of chronically ill patients. Accordingly, the nursing profession in acute care settings should increasingly place an emphasis on developing knowledge and skills that promote patients’ health status and ability to provide self-care. Lack of appropriate self-care behaviors may result in higher cost for treatment.

More Severely Ill Hospitalized Patients

Providers are overwhelmed by the sharp rise in the acuity and complexity of patients care problems. Currently, hospital patients are more acutely ill than in the past and these patients are also being discharged faster (ANA, 1996). These patients require technical nursing expertise. These changes give nurses less time to educate patients and their families before discharge. Boyle (2004) stated that the current hospital practice of discharging acutely ill patients after abbreviated lengths of stay had intensified the burden of care for nurses and the risk for adverse events. Nurses face an increased number of
patient assessments, planning, and care delivery. Nurses also need to manage patient flow effectively to support unit operations.

Thai nurses share the same problems as their colleagues worldwide. Acute care nurses in Thailand are working under the impact of changes in the health care environment. Since 2001, the Thai government has implemented a universal coverage health care policy. More outpatients but fewer inpatients have been attending public facilities. However, these inpatients were more acutely and severely ill than in previous times (MOPH, 2004e) and require complex medical care and health information. At the same time, few professional nurses are available to care for more acutely ill patients. Nursing care is likely to be provided by personnel who are under nurses’ supervision, namely nurse aides.

Emphasis on Quality and Safe Care

The current health care climate has an impact on quality and safe care. Quality is required from the public. The new public concern about error and patient safety, as well as the continuing “quest for quality,” creates heightened nursing accountability for nursing care outcomes, while at the same time the numbers of nurses available to provide that care are decreasing (Gallagher & Rowell, 2003). Many agencies establish quality measures to support and guide health care institutes to demonstrate their quality of care. The American Nurses Association (ANA) developed nursing-specific quality indicators for quality of nursing services, initially for acute care (ANA, 1996). The ANA proposes that all nurses must become more knowledgeable about the measurement, improvement, and benchmarking of clinical costs, as well as the quality and outcomes specific to
nursing (ANA, 1995). In 1999, the National Quality Forum (NQF) also established and endorsed a set of nursing-sensitive performance measures to evaluate the quality of nursing care (Simpson, 2004). After these sets of outcomes were introduced, many studies are now conducted to show the relationship between nursing domains and patient outcomes.

In Thailand, the public also recognizes the importance of the quality of nursing care. Although a number of studies related to the quality of nursing care have been done, the need to define quality of nursing care and determine how to measure it is urgent (Kunaviktikul et al., 2001). A set of nurse-sensitive indicators of nursing care is proposed to support the measurement of quality of nursing care. In addition, in 2004, the Bureau of Nursing in Thailand sought to improve the nursing quality indicators that could reflect results of nursing activities and could be used for decision-making (Sawangdee, 2004). This project also endorsed a set of nursing quality indicators, which mostly are congruent with the ANA’s nursing-specific quality indicators. These include structural, process, and outcome indicators.

**Contribution of Nursing on Patient Outcomes**

Outcomes are consequences of health care services and are those changes among individuals or populations that can be attributed to health care, such as changes in health status, knowledge, behaviors, and satisfaction of patients and their family members (Donabedian, 2003). Patient outcomes are important to health care systems because they are one of the approaches to assessing quality of care. In 1994, the American Nurses Association (ANA, 2004) endorsed nursing-sensitive quality indicators, which are
recognized as being most affected by nursing care. These indicators function to capture the structure, process, and outcomes of nursing care. For example, the indicators of structure of care include nurse staffing or unit size, whereas the indicators of process of care include rate of pressure ulcers and nurse staff satisfaction. The indicators of outcomes of care include nosocomial infection rate, number of falls per total number of patient days, patient satisfaction with nursing care, pain management, educational information, and satisfaction with care in general. Similarly, Kunaviktikul and colleagues (2001) conducted an in-depth interview, focus group discussion, and expert discussion and found that six categories of patient outcomes are recognized to reflect quality of nursing care in Thailand. These categories include adverse incidents and complications, client satisfaction, satisfaction with information, time, satisfaction with pain management, and satisfaction with symptom management.

Outcomes that are identified as sensitive to nursing are based on the nurses’ scope of practice and domains of nursing, and that show empirical evidence linking nursing inputs and interventions to the outcomes (Doran, 2003). Maas, Johnson, and Moorhead (1996) defined nursing-sensitive patient outcomes as outcomes of patient or family caregiver state, behavior, or perception responsive to nursing interventions and conceptualized at the middle of abstraction (e.g., mobility level, nutritional status, and health attitudes). These outcomes represent the consequences or effects of interventions delivered by nurses and are manifested by changes in the patient’s health status, behavior, or perception and/or by the resolution of the presenting problem for which the nursing intervention is given (Maas & Johnson, 1998).
Nursing is foundational to healthcare in all settings; however its organizational structure and processes have not been explicitly included in many quality studies (Mitchell & Lang, 2004). The quality of nursing care and its contribution to patient outcomes remains relatively understudied. This brings an urgent need to incorporate the broader range of outcomes into available databases because most studies that evaluate quality and system interventions focus on linking negative outcomes to structural and process inputs (Mitchell & Lang, 2004).

Nursing system theories consistently propose that patient outcomes are the result of a numbers of factors. For example, the Quality Health Outcome Model (QHOM) proposes that patient outcomes are directly influenced by patient and system characteristics; and nursing interventions indirectly affect those outcomes through patient and system characteristics (Mitchell, Ferketich, & Jennings, 1998). The Nursing Role Effectiveness Model proposes that nurses’ independent role function can have a direct effect on clinical, functional, satisfaction, and cost outcomes (Irvine, Sidani, & McGillis Hall, 1998). According to those propositions, identifying outcomes for which nursing can be held accountable is challenging.

Nurses in acute care settings provide nursing care over significant periods of time to clients with serious and chronic problems. The goals of nursing care in these settings are maintenance of function of client’s health and promotion of their self-care abilities. Similarly, the role of Thai nurses has been more focused on health promotion rather than illness cures (Burnard & Naiyapatana, 2004). Therefore, outcomes of interest for nursing in acute care settings are intermediate patient outcomes, which are feasible to be
measured and reflect the inputs of acute care nursing. These outcomes should be linked to the ultimate goals of health care services including maintenance and improved health status of clients. Therefore, the outcomes of interest for this study are inpatient’s confidence in self-care behaviors and satisfaction with care.

The potential for self-care is one of the patient outcomes that are included in the objectives of the 9th Health Development Plan of Thailand. Potential for self-care can strengthen an individual’s health status. Strategies to achieve an individual’s potential for self-care are to create the values for society members to emphasize and realize the importance of health consciousness and healthy lifestyles, which are based on self-reliance and self-care principles. The patient’s perception of being well-cared for or patient satisfaction is one of the patient outcomes frequently studied in nursing organizational research and a goal of health professionals. In addition, appropriate self-care behavior and perception of being well-cared for are the outcomes proposed in the QHOM to demonstrate the contribution of nursing to these outcomes.

It is recognized that patient outcomes are attributed to many factors. Thus, outcomes are multifaceted and reflect various inputs to them and are affected not only by the care provided, but also by the factors related to the patient, to the interpersonal aspects of care, and to the settings or environment in which the care is provided (Brooten & Naylor, 1995). Patients have individual characteristics, which affect their care and outcomes (Newhouse & Mills, 2002). Particularly, health outcomes in the context of chronic disease are hard to measure because the patient’s conditions are likely to have deteriorated (Georgiou & Pearson, 2002). For example, differences in socioeconomic
status, ethnicity, and social support will impact outcomes of health care. Research suggests that patients’ opinions about their health and health care are affected by many factors including their age, sex, race, ethnicity, education, burden of illness, extent of functional impairments, cultural, religious beliefs and practices, expectations, and preference (Iezzoni, 2003).

Patient outcomes are also confounded by patient’s beliefs and attitudes. According to the self-regulation model, coping procedures used for threat control rely on people’s definitions of disease threats (Leventhal, Leventhal, & Contrada, 1998). Chronic diseases (e.g., diabetes mellitus, hypertension, and congestive heart failure) generally have common characteristics. For example, chronic diseases cannot be cured, but they are controlled. To control these diseases, chronically ill patients require (a) adherence to treatment and medication, (b) health behavior regulation, and (c) continuous follow up. Therefore, how patients define or perceive their diseases and illnesses may influence the way they manage threats, control their diseases, and enhance health.

Objective evidence supports that linkages exist between nursing care and patient outcomes (Duffy & Hoskins, 2003). In addition, contextual factors of the acute care setting including nursing unit characteristics contribute to patient outcomes. The QHOM proposes that system characteristics; such as size, ownership, and skill mix directly affect patient outcomes (Mitchell et al., 1998). The majority of studies found an association between fewer adverse events in hospitals (e.g., nosocomial infection rate, medication errors, and pressure ulcer rates) and a higher percentage of registered nurses (RNs) with more nursing hours worked per patient day (Haberfelde, Bedecarre, & Buffum, 2005).
They also found an association between percentage of RNs on the unit and patient satisfaction (McGillis-Hall et al., 2003; Moore, Lynn, McMillen, & Evans, 1999; Potter, Barr, McSweeney, & Slefge, 2003). In addition, McGillis-Hall and colleagues (2003) and Potter and colleagues (2003) found relationships between staff mix and patient reports of self-care ability.

Many nursing system researchers explore the relationships between nursing characteristics and outcomes, particularly adverse events. Adverse event outcomes are frequently studied because there are already available data. However, adverse events do not capture the quality of nursing care that may contribute to long-term objectives including patient education and self-management. The results from these studies may not clearly show that there is an association between nursing variables and patient outcomes. Positive patient outcomes that are patient centered and from the patient’s perspective are not frequently studied in nursing system research because data collection of these outcomes is time consuming. Therefore, the contribution of nursing care to positive patient outcomes is unclear.

In Thailand, the study of the contribution of nursing on patient outcomes within a nursing system perspective is limited. Most studies focus on the effects of specific clinical procedures or conditions on outcome variables. For example, the investigation of compliance with universal precautions by emergency room nurses (Picheabsathian, 1995). Thagleawpun (1993) examined the relationships between skill of nursing personnel performing urinary catheterization and the incidence of nosocomial urinary tract infection and found that the more experienced nurse, the less likely the development
of a urinary tract infection in patients. It is also observed that the frequent outcomes of interest are adverse outcomes, such as nosocomial infection rates, mortality rates, and fall rates. After quality improvement activities, such as Total Quality Management and Quality Assurance, are introduced in health care services, other patient outcomes, such as patient satisfaction and length of hospital stay are studied. Recently, nursing system research has been introduced in Thailand. These studies take into account variables in nursing systems including organizational factors, nursing unit characteristics, and patient characteristics. For example, Sasichy-Akkadechanunt, Scalzi and Jawad (2003) found that the ratio of nursing staff to patients was significantly related to in-hospital mortality, controlling for patient characteristics. Few studies focus on positive patient outcomes. Chunuan (2002) found that the nurse to patient ratio in the unit was an important factor that significantly correlated with patient satisfaction. Jumpamool (2003) included both adverse patient outcomes and positive patient outcomes in examining the relationships among nursing demographics, nursing unit characteristics, and quality of care. The outcomes of interest were length of patient stay, overall nosocomial infection, and patient satisfaction. The results showed that patient characteristics and nursing demographics had more influence on patient outcomes than did nursing unit characteristics.

Thai nurses and nurse administrators recognize quality and safe care. Consequently, nurses are encouraged continuously to increase their skills and knowledge to promote good nursing care. However, there is a sparseness of evidence showing the linkages between the abilities of staff nurses to perform their role and positive patient
 outcomes. Yet, the relationships between cohesion of staff nurses and positive patient outcomes remain unexposed.

Purpose of the Study

The purpose of this study was to identify the effects of patient characteristics and nursing unit characteristics on nursing-sensitive patient outcomes. It was also designed to identify patient outcomes that might be sensitive to nursing care. The patient characteristics were patient’s illness representation, severity of illness, and duration of illness. The nursing unit characteristics selected in this study were nurse staffing, nursing staff’s competency, and group cohesion. The nursing-sensitive patient outcomes included patient’s confidence in self-care abilities, and patient’s perception of being well cared for. This study focused on chronically ill patients who had health problems and needed medical treatment in acute care settings in general hospitals in Thailand. This study was particularly concerned with six major chronic diseases including: non-insulin dependent diabetes mellitus, hypertension, chronic obstructive pulmonary disease, congestive heart failure, coronary artery heart disease, and cerebrovascular accident. These categories were selected because they were the first six major reasons for hospitalization of adults and older adults in acute care settings in Thailand.

Research Questions

1. Do selected patient characteristics (i.e., age, gender, education, duration of illness, severity of illness, and illness representation) and nursing unit characteristics (i.e., nurse education and nurse experience, nurse staffing, nursing unit competency,
and group cohesion) relate to patient’s confidence in self-care and patient’s perception of being well-cared for?

2. How do patient characteristics and nursing unit characteristics (as evidenced from question 1) relate to patient’s confidence in self-care and patient’s perception of being well-cared for?

3. Do selected patient characteristics predict patient’s confidence in self-care and patient’s perception of being well-cared for when controlling for nursing unit characteristics?

4. Do nursing unit characteristics predict patient’s confidence in self-care and patient’s perception of being well-cared for when controlling for patient characteristics?

5. Are there significant individual and contextual effects on patient’s confidence in self-care and patient’s perception of being well-cared for?

6. Which are statistically significant individual and contextual predictors of patient’s confidence in self-care and patient’s perception of being well-cared for?

Significance

The evidence of relationships between nursing domains and patient outcomes ensures the documentation of nursing contributions to society. This study will extend knowledge about the individual and contextual effects of nursing-sensitive patient outcomes.
Accounting for Patient Characteristics and Nursing Unit Characteristics

The integration of patient and nursing unit characteristics to explore patient outcomes supports the concept that patient outcomes are affected not only by the care provided, but also by the factors related to the patient, to the interpersonal aspects of care, and to the settings or environment in which the care is provided (Brooten & Naylor, 1995). The findings from this study will promote the understanding of patient’s confidence of self-care abilities and patient’s perception of being well-cared for from the domains of patient and nursing care systems within the context of acute care settings in Thailand. This study highlights the effects of patient and nursing unit characteristics on patient outcomes. Patient characteristics need to be included when identifying patient outcomes because they directly influence outcomes. This study is also unique in its attempt to identify the relationships among patients’ perceptions of their illnesses or patients’ illness representations and patient outcomes within a nursing system model. Patient’s illness representation is considered an important factor influencing patient coping behaviors. Understanding patients from their perspective guides nurses to provide more appropriate nursing care to each patient. Nursing unit characteristics will be included in this study to provide a comprehensive model and to explain the contextual effects of nursing on patient outcomes.

Guide for Making Decision in Health Care Services

Identifying appropriate patient outcomes that are sensitive to nursing promotes a more accuracy assessment of nursing care. Outcome evaluation facilitates ongoing enhancement of nursing care delivery, enabling determination of best practices and
identification of opportunities for practice improvement. The studies of nursing-sensitive patient outcomes are of interest for nurse researchers because they provide an understanding of the influence of nursing intervention and nursing system characteristics on those outcomes, which guide the development of nursing knowledge and nursing professional practice. Many studies reported the influences of nurse staffing models on organizational and patient outcomes (Blegen, Vaughn, & Goode, 2001; McGillis-Hall, Doran, & Pink, 2004; Moore et al., 1999). These studies provide nurse administrators to design nurse staffing models that fit their organizational goals. For example, Moore and colleagues (1999) found that the percentage of nursing staff (RNs) caring for patients on the unit was a significant positive predictor of patient satisfaction. In addition, Aiello, Garman and Morris (2003) found that patient-provider interaction as well as patient characteristics were significant influences on patient satisfaction. These findings provide nurse administrators to design appropriate nursing care models and policy makers to make decision about nursing service delivery systems appropriate for chronically ill patients. In addition, these findings facilitate nurse theorists to support the development of nursing system models, such as models of nurse staffing or patient-nurse relationships.

*Promote the Recognition of Nursing-Sensitive Patient Outcomes*

Nurses, using their considerable knowledge, their brains, not just their hearts, protect patients from the risks and consequences, not only of illness, disability, and infirmity, but also of the treatment of illness. Nurses make sure patients survive not only physically but emotionally, and they help family members cope with their loves ones’
illness and help them to assist in the process of recovery, coping, healing, or even dying (Gordon, 2005, p. 11).

Confidence in self-care abilities is the outcome of interest in this study. Yet, this outcome has not been studied from the nursing system perspective in Thailand. However, the patient’s confidence in self-care abilities has been recognized by society because the 9th Health Development Plan endorsed promotion of self-care as an important objective of health care services in Thailand. In addition, the patient’s perception of being well-cared for is generally a quality indicator of health services at the unit-level, hospital-level, and national-level (Sawangdee, 2004). Therefore, evidence supporting the relationships between nursing and patient’s self-care abilities and patient’s perception of being well-cared for will ensure the contribution of the nursing profession to the public and society in Thailand.

Exploring a Contextual Effect on Patient Outcomes

This study will strengthen the premise that the effects of nursing unit characteristics may affect patient outcomes within the context of the nursing unit. Using contextual analysis can investigate the relationships of both individual and group characteristics with an outcome variable (Boyd & Iversen, 1979). The contextual analysis will determine whether group membership contributes to the explanation of variance in an outcome measure after the effects of individual characteristics have been taken into account (Holzemer, Jennings, Chambers, & Paul, 1989). This type of statistical analysis will help nurse researchers explore relationships among patient outcomes and the factors contributing to them. This analysis is significant for investigators in nursing systems
because (a) the analysis can take into account both individual patient variables and nursing group variables at the same time, (b) most nursing variables are demonstrated at a group level, (c) groups of nurses perform nursing care to an individual patient, and (d) patient outcomes are affected by a variety of factors from different levels. This study will use contextual analysis to explore whether nursing unit characteristics or individual patient characteristics have effects on individual patient outcomes. The demonstration of relationships among patient outcomes and factors affecting them from various aspects provides the opportunity to improve quality of care. Results from this study will provide evidence about which factors should be manipulated to promote patient’s confidence in self-care abilities and patient’s perceptions of being well-cared for.

Summary

Health care systems in Thailand focus on strengthening individuals, families, communities, and societies to improve self-care through the promotion of quality health services. However, the current health services climate in Thailand challenges health care personnel to identify their contribution to society. This study will explore whether nursing contributes to society through the research questions and an analysis of the contextual effects of selected nursing domains on nursing-sensitive patient outcomes consisting of patient’s confidence in self-care abilities and patient’s perception of being well-cared for.
CHAPTER 2: REVIEW OF THE LITERATURE

This chapter explores potential factors that are considered to affect nursing-sensitive outcomes in hospitalized patients. First, the Quality Health Outcomes Model (QHOM), which is the theoretical framework underpinning this study is presented. A review of published literature in relationship to nursing systems, chronic illness, and acute care led to the development of the theoretical framework used in this study. The theoretical framework used for this study is illustrated through the relationships between (a) patient characteristics including patient demographics and clinical factors (i.e., duration of illness, severity of illness, and illness representation) and nursing-sensitive patient outcomes, (b) nursing unit characteristics (i.e., staff nurses’ education and experience, nurse staffing, nursing unit competency, and group cohesion) and nursing-sensitive patient outcomes.

Conceptual Framework

Quality Health Outcomes Model

The theoretical framework underpinning this study is the Quality Health Outcomes model (QHOM). The QHOM is considered the model that best informs this study because it establishes specific relationships between factors in a nursing care situation as well as provides guidance to identify nursing–sensitive patient outcomes and factors affecting patient outcomes. This model contributes to knowledge in nursing by framing multilevel analyses of context or system interactions with individual interventions and care (Mitchell & Lang, 2004). In addition, this model exemplifies systems thinking in health care services.
The QHOM was developed by the AAN (American Academy of Nursing) Expert Panel on Quality Health Care in 1996. The QHOM was developed from Donabedian’s structure-process-outcome framework and Holzemer’s extension of the structure-process-outcome framework to the vertical axis consisting of client, provider, and setting. This model extends the structure-process-outcome framework to a dynamic model recognizing that feedback occurs among clients, the system or context in which care is provided, and interventions (Mitchell et al., 1998). This model links outcomes to the interactions of clients and care system features with health care interventions aimed at individual, family, and community levels (Mitchell, Heinrich, Moritz, & Hinshaw, 1997). The four major concepts included in this model are system, interventions, clients, and outcomes. These concepts have reciprocal interactions, except for interventions and outcomes. There are no direct connections between interventions and outcomes. That is, the effect of interventions on outcomes are mediated and moderated by client and system characteristics (Mitchell et al., 1998). Factors in nursing care situations that may affect patient outcomes include the three major concepts of the QHOM: system, interventions, and patient characteristics. Four relational propositions show the relationships between major concepts. First, interventions affect and are affected by both system and client characteristics in producing desired outcomes. Second, the effect of an intervention is mediated by client and system characteristics. Third, outcomes will be directly affected by characteristics of the clients to whom the interventions are directed. Finally, outcome measures should be the results of care structures and processes that integrate functional,
social, psychological, physical, and the physiology of individuals’ experiences in health and illness (see Figure 1).

Figure 1.

*The Quality Health Outcomes Model (QHOM) (Mitchell, Ferketich, & Jennings, 1998)*

**System Characteristics**

System characteristics are traditional structure and process elements of nursing organizations, such as size, ownership, skill mix, and technology. There are three levels of system characteristics including individual, group, and organizational levels. The system characteristics in the QHOM are considered to directly affect and be affected by patient outcomes. The system characteristics are the mediators of client characteristics and interventions in producing patient outcomes.

**Interventions**

Interventions are clinical processes and related activities delivered by nurses. There is no clear definition of nursing interventions. McCloskey (1998) defined a nursing intervention as any treatment, based upon clinical judgment and knowledge, which a nurse performs to enhance patient/client outcomes. Nursing interventions include both
direct and indirect care, as well as nurse-initiated, physician-initiated, and other provider-initiated treatments. Nursing interventions in this model are considered moderators of both system and client characteristics in producing patient outcomes. In addition, the nursing interventions are affected by both system and client characteristics as well. Studies focused on the contribution of nursing interventions on patient outcomes test specific nursing interventions and models. Studies exploring the contribution of direct nursing interventions on patient outcomes through characteristics of the system and patients are limited because of methodological issues, such as measurement of nursing interventions, and control of confounding factors.

Research demonstrates that major processes of nursing care are associated with patient satisfaction. Otani and Kurz (2004) using a cross-sectional study examined the influences of healthcare attributes including admission process, nursing care, physician care, compassion to family/friend, pleasantness of surroundings, and discharge process on overall hospitalized patient satisfaction and behavioral intentions. The results showed that nursing care was more important in improving those outcomes than other selected variables (Otani & Kurz, 2004).

Client Characteristics

Client characteristics are factors directly affecting outcomes. Client characteristics include client health, demographics, and disease risk factors. Kreulen and Braden (2004) found that client characteristics including age, social network size, disease stage, chemotherapy, resourcefulness, and uncertainty had a direct effect on patient outcomes. It is believed that clients live in a social environment with cultural values and beliefs about
health and health care. These values and beliefs affect the clients’ desire to interact and ability to interact with a care delivery system (Holzemer, 1994). Mitchell and colleagues (1998) suggested that client characteristics had a meaningful, direct effect on behavioral and health status outcomes. However, there was variability in client factors as predictors at different times of measurement. For example, uncertainty was a consistent strong predictor of self-care and health status outcomes at time three, while age, social network size, chemotherapy, and resourcefulness were predictors at time one and two (Kreulen & Braden, 2004).

Outcomes

Patient outcomes in this model are those that are considered sensitive to nursing care. The QHOM proposed that outcome measures should be results of care structures and processes that integrate functional, social, psychological, physical, and physiologic aspects of people’s experience in health and illness (Mitchell et al., 1998).

Outcomes that are identified as sensitive to nursing are those that are relevant, based on the nurses’ scope and domain of practice, and for which there is empirical evidence linking nursing inputs and interventions to the outcomes (Doran, 2003). Maas, Johnson, and Moorhead (1996) defined nursing-sensitive patient outcomes as variables concerning patient or family caregiver state, behavior, or perception responsive to nursing interventions and conceptualized at middle levels of abstraction. These outcomes represent the consequences or effects of interventions delivered by nurses and are manifest by changes in the patient’s health-related state, behavior, or perception and/or by the resolution of the presenting problem for which the nursing intervention is given
Outcomes of interest should be characterized by health-oriented and patient-centeredness and should reflect the goals of interventions and care that promote, maintain, and enhance the health of patients (Sidani, Doran, & Mitchell, 2004). Whitman (2003) suggested that outcomes that should be monitored best reflect the needs of the patient population as well as the requirements and capabilities of healthcare organizations. In addition, Sidani and Braden (1998) proposed that the health outcomes achieved by patients are viewed as indicators of the quality of the care they received.

The patient outcomes proposed in the QHOM encompass five categories including achievement of appropriate self-care, demonstration of health-promoting behaviors, health-related quality of life, perception of being well-cared for, and symptom management. Nursing in acute care settings focus on helping patients and families maintain and improve patients’ health status and quality of life. Therefore, these patient outcomes are considered valuable for hospitalized chronically ill patients.

The Development of a Conceptual Framework

The conceptual framework developed for this study is derived from the QHOM. The QHOM guides the identification of the factors contributing to patient outcomes, which is the focus of this study. The scope of this study is chronically ill patients admitted to acute care settings. Therefore, studies supporting this framework derive primarily from the literature on chronic illness and acute care settings.

The QHOM proposes that interventions affect and are affected by both system and client characteristics in producing desired outcomes. Second, the effect of an intervention is mediated by client and system characteristics. Third, outcome measures
should be the results of care structures and processes that integrate functional, social, psychological, physical, and the physiology of people’s experience in health and illness. These propositions guide the literature review. Then, the current conceptual framework for this study is described, which includes three major concepts: patient characteristics, nursing unit characteristics, and nursing-sensitive patient outcomes. It is proposed that patient characteristics and nursing unit characteristics directly affect nursing-sensitive patient outcomes. The patient characteristics refer to demographic characteristics, duration of current illness, severity of illness, and patient’s illness representation. The nursing unit characteristics include nursing staff demographics, nurse staffing, competency of nursing staff, group cohesion. The nursing-sensitive patient outcomes for this framework are patient confidence in self-care abilities and patient perceptions of being well cared for (see Figure 2).
Figure 2.

*Figure 2.*

*A Conceptual Framework for this Study*

**Patient characteristics**
- Age, gender, education
- Severity of illness
- Duration of illness
- Illness representation

**Nursing-sensitive patient outcomes**
- Confidence in self-care abilities
- Perceptions of being well-cared for

**Nursing unit characteristics**
- Education, experience
- Nurse staffing
- Nursing unit competency
- Group cohesion

*Nursing-Sensitive Patient Outcomes*

To monitor and improve patient outcomes, the selection of outcomes should be appropriate for particular care settings and patient characteristics. Bodenheimer, Lorig, Holman, and Grumbach (2002) noted that patients with chronic conditions make day-to-day decisions concerning the self-management of their illnesses. Patients with different chronic diseases often had similar problems related to activities of daily living, interactions with health care systems, communication with family and friends, and
dealing with negative emotions such as fear, anxiety, and depression (Bodenheimer et al., 2002). Therefore, nursing-sensitive patient outcomes that are considered appropriate for hospitalized chronically ill patients should be associated with how these patients perform self-management of their illness. A characteristic of acute care delivery systems is that nursing care is provided to patients within a short period. Nurses cannot ensure how well patients perform their self-management abilities at home. However, Bandura (1986) proposed that a good predictor of motivation and behavior is the strength of belief in one’s capability to do a specific task or achieve a certain result. Therefore, confidence in self-care abilities is included in this study as a nursing-sensitive patient outcome.

The outcome indicators suggested in the QHOM are thought to be sensitive to nursing care inputs and can be found in several “report card” initiatives in the United States and Canada (Mitchell & Lang, 2004). Patient satisfaction with care is included in many of these report cards. Many studies supported the association between patient satisfaction with care and many important outcomes required for chronically ill patients, such as improved health status, quality of life, and adherence. Adherence to treatment is recognized as a very significant outcome for patients who need continuous treatment because it illustrates the extent to which a patient’s behavior (e.g., taking medication, following a diet, modifying habits, or attending clinics) coincides with medical or health advice (Haynes, 2001). Adherence to a health care plan is affected by various factors such as effective interventions, appropriate information, motivation, or beliefs. Studies support that a patient perception’s of being well-cared for and patient satisfaction increased patient intention to return to hospitals (Hill & Doddato, 2002; Otani & Kurz,
2004), patient adherence to treatment, and continuity of care (Lochman, 1983). Therefore, another patient outcome of interest for this study is patient perceptions of being well-cared for.

Confidence in Self-Care Abilities

Major health problems have shifted from acute conditions to chronic conditions. New forms of care, such as Continuous Abdominal Peritoneal Dialysis or monitoring blood sugar, have emerged in current health care systems. Together, people have begun to demand more active participation in their care. These situations bring forth the importance of knowledge of self-care. Appropriate self-care was considered the best proxy for effectiveness of nursing practice (Henry & Holzemer, 1997). Self-care is defined in various perspectives. From a nursing perspective, Orem (2001) referred to self-care as (a) “action of mature and maturing persons who have the powers and who have developed or are developing capabilities to use appropriate, reliable, and valid measures to regulate their own functioning and development in stable or changing environments, “(b) the practice of activities that individuals initiate and perform on their own behalf in maintaining life, health, and well-being”, and (c) “a practical response to and experienced demand to attend to oneself”. The purposes of self-care are to supply and maintain a supply of materials and conditions to maintain life and to keep physical and psychic functioning and development within norms compatible with conditions essential for life and for integrity of functioning and development.

Steiner and Lipson (1985) expanded the scope of self-care and defined self-care as those activities initiated or performed by an individual, family, or community to
achieve, maintain, or promote maximum health. Hill and Smith (1990), although not recommending a comprehensive list, suggested that self-care components are identified into behaviors related to mind and body. The behaviors related to mind include psychological health, relaxation, spirituality, and play. The behaviors related to body are exercise, sleep and dream, nutrition, sexuality, environmental health, and physical health.

From a medical perspective, in 1976, Lowell Levin defined self-care as “a process whereby a layperson functions on his/her own behalf in health promotion and prevention and in disease detection and treatment at the level of the primary health resource in the health care system” (Levin, Katz, & Holst, 1976). From a social role perspective, self-care behavior can also be defined as a characteristic attribute of whole populations; as a level or element in social competence to cope with health and disease, complementary or alternative to the professional health resources (Levin et al., 1976). In 1975, John Fry identified four roles for self-care including health maintenance; disease prevention; self-diagnosis, self-medication, and self-treatment; and patient participation in professional care, i.e. use of service (Levin et al., 1976).

Acute care nurses interact with chronically ill patients during a short period while these patients are hospitalized and found it difficult to evaluate outcomes relating to patients’ abilities to provide self-care at home. Confidence in self-care abilities while in the hospital setting is recognized as a proxy measure of self-care abilities at home. Bandura (1994a) used self-efficacy to define the confidence that individuals have in their ability to plan and execute a course of action and to accomplish a task or solve a problem. Self-efficacy provides a bridge between knowledge and actual self-care behaviors. The
concept of self-efficacy was found to be related to a person’s self-care agency or one’s ability to perform self-care behaviors (Lev, 1995; Williams & Bond, 2002). For instance, Williams and Bond (2002) found that self-efficacy beliefs were strongest for medication use and blood glucose testing in adult diabetics. According to Bandura (1986), the strength of belief in one’s capability to do a specific task or achieve a certain result can predict motivation and behavior. Self-care self-efficacy involves judgment of one’s ability to perform self-care behaviors (Callaghan, 2005). A strong sense of efficacy enhances human accomplishment and personal well-being. People with high assurance in their capabilities approach tasks as challenges to be mastered rather than as threats to be avoided (Bandura, 1994b). Therefore, confidence in self-care is comprised of the concepts of self-care and self-efficacy.

Bandura (1994b) noted that there are four main sources of influence in developing people’s beliefs about their efficacy. These sources of influence include mastery experiences, social models, social persuasion, and reducing people’s stress reactions. According to the scope and practice of nursing care, nursing care can support and create these sources. For example, patients with chronic obstructive pulmonary disease who participated in a structured, individualized educational and supportive telephone follow-up program had significantly higher scores of self-efficacy than those who did not participate in this program (Wong, Wong, & Chan, 2004). Similarly, back pain patients who attended a brief intervention designed to provide accurate information about back pain, instill attitudes favorable towards self-care, reduce fear and worries, assist patients in developing personalized action plans to manage their back pain, and improve
functional outcomes showed significantly greater reductions in back-related worry and fear-avoidance beliefs than the control group (Moore, Korff, Cherkin, Saunders, & Lorig, 2000).

Empirical studies demonstrate the link between self-efficacy and self-care behaviors and health status. For example, Lorig and colleagues (1999) revealed the effects of improving self-efficacy on patient outcomes. They evaluated the effectiveness of a self-management program for a heterogeneous group of chronic disease patients including heart disease, lung disease, stroke, or arthritis. The teaching program in this intervention is based on self-efficacy theory. Its strategies are suggested by Bandura to enhance self-efficacy. The findings showed that patients who participated in this program, when compared with those who were in the control group, demonstrated improvement at 6 months on minutes per week exercising, frequency of cognitive symptom management, communication with physicians, self-reported health, health distress, fatigue, disability, and social/role activities limitation. In addition, this program can decrease hospitalization and days in hospital (Lorig et al., 1999). Lorig and colleagues (1999) suggested that this program had a potential of saving health care costs. Similarly, Carlson and colleagues (2001) evaluated changes in psychosocial measures including self-efficacy and social support, which were considered to predict subsequent exercise behavior in cardiac patients with low to moderate risk randomized to a traditional cardiac rehabilitation protocol (TP) or modified protocol (MP). The MP was based on Bandura’s self-efficacy theory that emphasized four components including: verbal persuasion, vicarious learning (i.e., discussion of patient successes and barriers
relative to exercise and other health behaviors), performance accomplishments (e.g., discussion exercise test results), and physiological states (e.g., reviewing normal and abnormal physiological responses to exercise). The results showed that the MP patients had higher levels of self-efficacy for independent exercise without continuous ECG monitoring and self-efficacy for independent exercise was the only significant predictor of exercise over 6 months (Carlson et al., 2001).

The attention of patient confidence in self-care abilities is given to the integration of self-care and self-efficacy concepts. These concepts are considered viable approaches for developing nursing care that supports the needs of individual patients. It is essential for nurses working in acute care settings to ensure that their chronically ill patients have confidence in their ability to follow a self-care regimen. The number of studies related to the effect of nursing unit characteristics on the ability of patient self-care is limited. However, it was found that nursing variables affect self-care variables. For example, Doran and colleagues (2002) investigated the propositions depicted in the Nurse Role Effective Model, where nurse and patient structural variables were expected to influence nurses’ role performance, which in turn was expected to affect patient outcomes including patient’s therapeutic self-care ability, functional status, and mood disturbance at the time of hospital discharge. Nursing unit characteristics included in this analysis were nurse structural and unit structural variables as well as nurse role variables. The nurse structural variables were nurse’s length of hospital employment, nurse education; the unit structural variables were nurse job autonomy, and role tension; and the nurse role variables were quality of nurse’s independent role, nurse communication, and
coordination of care. The results revealed that the three role performance variables were associated with patients’ therapeutic self-care ability at hospital discharge. In addition, structural variables were associated with nurse role variables, which in turn affected therapeutic self-care (Doran, Sidani, Keatings, & Doidge, 2002).

*Perception of Being Well-Cared For*

Patient perception is recommended as an appropriate measure of health care quality because (a) patient perception may be more sensitive across health care settings, (b) patient satisfaction can capture positive aspects of care, and (c) it is recognized that competent patients have a right what is best or satisfied for them (Rosenthal & Shannon, 1997). Clearly and colleagues (1991) also supported that patient satisfaction could serve as a useful tool for motivating, shaping, and evaluating important new efforts to improve quality (Cleary et al., 1991).

Patient perception of care usually has been conceptualized as patient satisfaction (Lin, 1996). Patient satisfaction is the concept that is frequently used to assess patient perception of care delivered. Patient satisfaction is considered beneficial to monitor in health care institutions because today’s buyers of health care services are better educated and more aware than in the past (Andaleeb, 1998). In addition, patient satisfaction reflects patients’ opinions, and is potential influences in a managed care plan.

There is a lack of conceptual rigor and clarity of patient satisfaction (Maciejewski, Kawiecki, & Rockwood, 1997; Thomas & Bond, 1996; Williams, Coyle, & Healy, 1998). Patient satisfaction is dependent on individual expectations and judgment. Laschinger and Almost (2003) conducted a concept analysis and found that
patient satisfaction was frequently defined as the extent to which patients’ expectations of care matched the actual care received. The measures of patient perception focus on (a) a comparative balance between patient perception of services delivered and patient expectation for standard of services and (b) directly assessing elements that enter into judgments of patient satisfaction (Rosenthal & Shannon, 1997). Therefore, it is recommended to use the patient’s experience to evaluate satisfaction with care (Thomas & Bond, 1996).

Patient perception of being well cared for is recognized as an outcome of nursing services. It was endorsed in the Health Quality Outcome Model as a nurse-sensitive patient outcome (Mitchell et al., 1998) and in the Quality Caring Model as an intermediate outcome (Duffy & Hoskins, 2003). In the Quality Caring Model; the patient’s perception of being well cared for refers to feelings about the caring process, which influences overall satisfaction with care, a terminal outcome (Duffy & Hoskins, 2003).

Perception of being well cared for was one of the outcome indicators resulting from advanced practice nurses (APNs) brainstorming techniques to identify indicators they used to measure their effect on patients and families (Ingersoll, McIntosh, & Williams, 2000). In this study, patient perception of being well cared for and patient satisfaction were separately evaluated by different measures. Patient perception of being well cared for was ranked by the APNs in the third place, while patient satisfaction was ranked in the first place (Ingersoll et al., 2000).
Although patient satisfaction is considered a subjective measure, it is the most common patient-centered outcome studied and has the longest history for studied outcomes. Satisfaction with the providers of care reflects certain features of the conditions under which care is provided, may contribute to good professional performance, and may also be a judgment of that performance (Donabedian, 1982). In Donabedian’s framework for health care evaluation, patient satisfaction may be considered a measure of the process of care (Donabedian, 1980). Therefore, patient satisfaction is the concept of interest indicating quality of care that is included in many quality frameworks, such as patient-centered care models developed by the Picker-Commonwealth Institute (Cleary et al., 1991). In addition, patient satisfaction is important in various quality initiatives, such as in quality assurance, total quality management, and continuous quality improvement.

Specific to nursing, patient satisfaction is included in the set of nursing-sensitive quality indicators endorsed by the American Nurses Association (ANA, 1995) and by the Bureau of Nursing Thailand (2003). The American Nurses Association (ANA, 1995) defines patient satisfaction with nursing care as patient opinion of care received from nursing staff during the hospital stay. Patient satisfaction with care is determined by scaled responses to a uniform series of questions regarding key elements of nursing care services. Patient satisfaction is grouped into satisfaction with nursing care, pain management, educational information, and care in general (ANA, 1995). The Bureau of Nursing in Thailand (2003) also endorsed patient satisfaction as a quality indicator. Patient satisfaction refers to patients’ opinion of the care they received. Here patient
satisfaction is categorized into six domains including: general nursing care, information and teaching, helping, relieving discomfort, participation in decision making, and ensuring patients’ rights.

Patient satisfaction can address many aspects of care, for example; interpersonal aspects of care; accessibility, availability, and convenience of care; continuity of care, technical quality of care; efficacy; and financial consideration (Maciejewski et al., 1997). Cleary and colleagues (1991) developed a questionnaire focusing on specific actions taken by hospital staff other than general aspects of care. These specific actions include physical comfort, pain management, education, family participation, and discharge preparation/continuity of care (Cleary et al., 1991). Results from the literature review conducted by Chang (1997) found that, although measures vary, the most common domains existing in the measurement of patient satisfaction were process components, such as availability, technical skills, art of care, explanation of care, and continuity of care.

Patient satisfaction is attributed to various healthcare factors. Otani and Kurz (2004) investigated which healthcare attributes were significantly associated with patient satisfaction. They found that, except for discharge process variables, all attribute variables including admission process, nursing care, physician care, compassion to family/friend, and pleasantness of surroundings were significantly related to overall patient satisfaction. While nursing care showed the largest parameter estimate, followed by admission process, pleasantness surroundings, compassion to family/friend, and physician care. It was suggested that if nursing units want to increase overall patient
satisfaction, attention should be focused on nursing care rather than other service attributes (Otani & Kurz, 2004). In addition, Larrabee and colleagues (2004) examined predictors of patient satisfaction with inpatient hospital nursing care. The predictors in this model included registered nurses’ job satisfaction, context of care, structure of care, patient-perceived nurse caring, and patient characteristics. The findings revealed that patient-perceived nursing care and nurse-physician collaboration were significant direct predictors of patient satisfaction, while patient age was an indirect predictor of patient satisfaction (Larrabee et al., 2004). Vahey and colleagues (2004) examined the effect of the nurses’ work environment and nurse burnout on patients’ satisfaction with nursing care in 20 urban hospitals across the United States. The findings showed that patients in the units with adequate staff, good administrative support for nursing care, and good relations between doctors and nurses reported high satisfaction with their care (Vahey, Aiken, Sloane, Clarke, & Vargas, 2004).

In Thailand, many studies explored patient satisfaction in various perspectives. For example, Khumyu (2002) studied the relationships between nurse staffing, nurses’ job satisfaction, and patient satisfaction with nursing care with public hospitals in Thailand and found that nurse-to-patient ratio significantly correlated with patient satisfaction. Jumpamool (2003) conducted the contextual analysis of patient and nursing characteristics on quality of inpatient care in Thailand, and found that nursing expertise, indicated by age, experience, and Total Quality Management and nurse educational training affected the quality of care indicated by patient satisfaction, patient length of stay, and overall nosocomial infection.
The patient perception of being well-cared for and patient satisfaction can be evaluated in several different ways. The majority of instruments measuring patient satisfaction with nursing care are not based on theoretical models; however, they include specific data that can be used by managers to improve patient care quality. Therefore, patient satisfaction with care is a key component of hospital report cards that are shared with both accreditation agencies and the public to monitor quality care over time (Laschinger, Hall, & Almost, 2005).

The majority of studies related to patient perception include a nursing component as part of a more general questionnaire measuring patient satisfaction with other aspects of the services (Thomas & Bond, 1996). For example, Kaldenberg and Becker (1999) used the SERVQUAL Scale measuring satisfaction in patients who had surgery. It is a 31-item scale measuring various hospital services including registration/access, lab/x-ray, nurses/staff, and center/building. Similarly, the Press Ganey Inpatient Satisfaction Survey (PGSS) includes an eight-item nursing subscale within this questionnaire. These items reflect domains of nursing care on the following: friendliness/courtesy of nurses; promptness in responding to the call button; nurses’ attitude toward your requests; degree to which the nurses took your health problem seriously; amount of attention paid to your special or personal needs; skill of the nurses; degree to which nurses kept patient adequately informed about tests, treatment, and equipment; and an overall evaluation item of nursing care by shift (Aiello et al., 2003).

It is recognized that a large degree of congruence in the features of nursing is related to quality of care. These features of nursing are nurses’ manner, provision of
information, maintenance of patient individuality and nurse clinical competence (Thomas & Bond, 1996). Some instruments particularly focus on the assessment of patients’ perceptions about nurse caring behaviors. For instance, the Care/Satisfaction Questionnaire (CARE/SAT) developed by Larson and Ferketich (1993) is a 29-item measure of patient satisfaction with nurses’ caring behaviors. Nursing behaviors denote caring to patients including accessibility, anticipation, comfort, trusting relationship, explaining and facilitating, and monitoring/following through.

Although the concept of patient satisfaction or patients’ perception of being well-cared for is familiar to health care providers, there is a need to understand it in terms of how they are affected by both patient characteristics and nursing unit characteristics.

**Patient Characteristics**

Patient demographics are important mediating or moderating covariates that must be considered when understanding the influencing mechanism between patient satisfaction and other outcomes (O’Connor & Shewchuk, 2003). Aiello and colleagues (2003) conducted a multilevel analysis examining the extent to which satisfaction with nursing care in a specific academic medical center was affected by influences at multiple levels. It was found that patient satisfaction with nursing care was significantly influenced by patient-specific characteristics and by patient-provider interactions during the episode of care; whereas variables at the unit-level (i.e., provider characteristics, and process characteristics) slightly influenced satisfaction. Patient demographics have been shown to have an impact on patient satisfaction. Age, gender, and education are associated with patient satisfaction ratings in research findings (Sitzia & Wood, 1997;
Woods & Heidari, 2003). Sitzia and Wood (1997) concluded from an analysis of over 100 papers published in the field of patient satisfaction that the demographic variables of age, education, gender, and ethnicity influenced patient rating of their satisfaction to health care.

Some studies argued that patient demographics were a minor predictor of patient satisfaction. A national telephone survey about selected aspects of care in adult patients recently discharged from medical and surgical services found that patient characteristics, such as age, gender, and education accounted for only 9 percent of the variance in the index of quality of care (Cleary et al., 1991). It was suggested that other factors, such as institutional characteristics may be important determinants of the rate of problems experienced by patients (Cleary et al., 1991). In addition, it was found in one study that, although rheumatoid arthritis (RA) and diabetes mellitus (DM) are very different diseases, and RA and DM patients had different demographics, satisfaction levels in these 2 groups of patients were remarkably similar (Bidaut-Russell et al., 2002).

**Age and Patient Outcomes**

Age is association with in-hospital mortality rate persisting even after statistical adjustment for other known risk factors, such as comorbid conditions (Derose, 1997; Iezzoni, 2003). It is recognized that older persons have worse clinical outcomes than younger persons (Iezzoni, 2003). Very old patients have lower physiologic reserves influencing the ability to rebound from the physical assaults of acute illness and are more likely to develop complications (Iezzoni, 2003). Palen and colleagues (1997) revealed that a significant change in self-efficacy of -0.002 was found with each increase in age
each one year (linear regression; 95% CI; \( p < .001 \)) (Palen, Klein, & Seydel, 1997).

Malathum (2001) explored factors contributing to perceived abilities for health-promoting self-care of community-dwelling Thai older adults and found that age was significantly negatively associated with perceived abilities for health-promoting self-care \( (r = -.45, p < .001) \) and also had a significant negative direct effect on perceived abilities for health-promoting self-care \( (\gamma = -160, p < .01) \).

Patient age and patient satisfaction are associated. Iezzoni (2003) noted that older patients may have different expectations of health care services and are often more satisfied than younger patients. Yellen (2003) explored the influence of selected variables on patient satisfaction in ambulatory care and found that age was significantly associated with patient satisfaction, i.e. as age increased, reported satisfaction with pain management increased. A study of cancer care in Norway found that younger patients (<40 years old) were more often dissatisfied than patients in the 40-65 years age group and those above 65 years old (Skarstein, Dahl, Laading, & Fossa, 2002). In addition, Larrabee and colleagues (2004) found in an investigation among 7 adult nursing care units that patient age was significantly and positively correlated with patient satisfaction \( (r = .22, p < .01) \) (Larrabee et al., 2004).

**Gender and Patient Outcomes**

Women and men differ in several attributes, such as anatomy and physiology. These attributes affect human growth, development, and behaviors. In general, women have been noted to have higher levels of morbidity and men had higher levels of mortality, for both acute and chronic condition (Derose, 1997). In addition, men and
women also face divergent risks for certain diseases. Controlling for gender is crucial for the studies of long-term population outcomes (Iezzoni, 2003). However, the role of gender on self-efficacy and self-care abilities shows inconsistent results. For example, Palen and colleagues (1997) showed mean self-efficacy scores of men with asthma were higher than those of women with asthma (Palen, et al., 1997). Etter and colleagues (2001) tested the effectiveness of a smoking cessation program of the French-speaking part of Switzerland and found that women were less confident than men in their ability to quit smoking (Etter, Prokhorov, & Perneger, 2001). Milligan and colleagues (1997) found that self-efficacy for following a healthy diet and moderating alcohol intake was greater in female but male had higher self-efficacy for physical activity. However, the same study found that self-efficacy for smoking did not differ according to gender (Milligan et al., 1997). Wong and colleagues (2004) found that self-efficacy scores of females and males with chronic obstructive pulmonary disease were not significantly different (Mann-Whitney U-test, \( p = 0.829 \)) (Wong et al., 2004).

There is an association between gender and patient satisfaction. For example, Larsen and colleagues (1979) found that gender affected patient satisfaction. For example, men tended to respond in the middle ranges, whereas women gave proportionately more very positive and negative responses (Larsen, Attkisson, Hargreaves, & Nguyen, 1979). Woods and Heidari (2003) conducted a random-selection, cross-sectional study to investigate the influence of gender on patient satisfaction with hospitalization care in adult patients discharged from hospital. After controlling for age, race, and insurance status, it was found that women expressed significantly less
satisfaction compared to men on four of six questions related to nursing care (Woods & Heidari, 2003). Similarly, Yellen (2003) found that gender is positively associated with pain management. Male patients were less satisfied with pain management in the ambulatory care. However, some studies failed to find significant gender differences in patient satisfaction. Skarstein and colleagues (2002) found no difference between men and women in response to patient satisfaction questionnaire (Skarstein et al., 2002). Wolf and colleagues (2003) found from the study of relationship between nurse caring and patient satisfaction in patients undergoing interventional cardiology that male and female subjects did not differ on perception of caring and patient satisfaction (Wolf, Miller, & Devine, 2003). Similarly, Larrabee and colleagues (2004) found that gender was not identified as a predictor of patient satisfaction (Larrabee, 2004).

**Education and Patient Outcomes**

Research studies show a relationship between patient education and self-care abilities. It was found that educational level affected self-care agency. Palen and colleagues (1997) found that an increase in generalized self-efficacy was observed with increasing education level of asthma patients (Palen et al., 1997). However, Lorig and colleagues (1999) tested the effectiveness of Chronic Disease Self-Management Program on health behaviors, health status, and health service utilization. When patient education was entered into the analysis as a covariant of outcomes, it did not affect these outcome variables (Lorig et al., 1999).

There is a weak relationship between education and patient satisfaction. Skarstein and colleagues (2002) found no difference among levels of education of cancer patients
in response to patient satisfaction questionnaire. Hudak and colleagues (2004) tested various theories of patient satisfaction on treatment outcomes of patients undergoing elective hand surgery. Education attainment was also considered in this study. It was found that there was no correlation between patient education and patient satisfaction (Hudak, Hogg-Johnson, Bombardier, McKeever, & Wright, 2004).

Severity of Illness and Patient Outcomes

Severity of illness is usually believed to be an important factor predicting outcome (Smith, 1997). Individual with complex illnesses, multiple coexisting diseases, or other significant risk factors generally develop more complications and experience worse outcomes, even with excellent care, than healthier individuals (Iezzoni, 2003). Therefore, meaningful comparisons within the health care system generally require risk adjustment, accounting for patient-associated factors before comparing outcomes across different patients, treatments, providers, and populations (Iezzoni, 2003). Smith (1997) stated that there are several reasons to incorporate severity of illness measures into an analysis. For example, it adjusts for selection bias, improves the ability of the model to predict outcomes, and forms a basis for subgroup analyses (Smith, 1997).

The severity of illness can be defined generically without reference to specific diagnoses (Smith, 1997). Smith (1997) stated that the components of illness severity that are the most important for outcomes research are, for example, general physiological severity, physiological severity of the principle diagnosis, and baseline measures of the outcomes domain.
The physiological severity of the principle diagnosis reflects basic physiologic functioning, such as heart rate, blood pressure, and level of consciousness. For example, the Acute Physiology and Chronic Health Evaluation (APACHE II) is a medical record-based system, which combines acute physiologic measurements and chronic illness factors designed to predict in-hospital and intensive care unit death. The APACHE II measure focuses on physical functioning as well as cognitive function (the Glasgow Coma Score). To indicate high burden of illness, the cut-point of more than 16 is used on the APACHE II (Inouye et al., 1998).

Baseline functional status significantly predicts patient satisfaction with care (Iezzoni, 2003). It is recognized that functional measures are stronger predictors of hospital outcomes. The majority of clinically defined concepts of severity, such as physiological severity, comorbidity, and instability are subcategories of the larger domain of physical functioning (Smith, 1997). Therefore, functional status is inclusive because it usually focuses on physical functioning and may include other domains, such as cognition and emotion. Inouye and colleagues (1998) recommended including functional status in the measurement of burden of illness. Davis and colleagues (1995) found that nursing assessments of patients’ functional status were stronger than most laboratory test values and comorbid disease (Davis et al., 1995). The modified Rankin Scale is a validated, global measure of functional health, emphasizing clinical disability (de Haan, Limberg, Bossuyt, van der, & Aaronson, 1995; Rojas, Silver, Llewellyn, & Rances, 2005). This scale is used to measure the impairment, initially for patients after stroke.
The Rankin Scale focuses on the functional health aspects, such as carrying out usual duties and activities, requiring some help, and requiring constant nursing care.

There are various measures to indicate the severity of illness. For example, Petrie, Weinman, Sharpe, and Buckley (1996) used the peak creatine kinase activity as a proxy measure of the severity of illness in patients with a confirmed myocardial infarction. Scharloo and colleagues (2000) measured the severity of psoriasis from the percentage of affected skin (Scharloo et al., 2000). Patient self-reports using well-validated functional status measures are now widely accepted (Iezzoni, 2003). For example, Bidaut-Russell and colleagues (2002) used the Medical Outcomes Study Short Form Survey measuring patients’ overall functional status and found that there was a univariate association between health status scores and satisfaction scores of patients with rheumatoid arthritis and diabetes mellitus (Bidaut-Russell et al., 2002).

Many studies reported that the severity of illness influences patient outcomes (Rosenthal et al., 1995). For example, Edwards and colleagues (2001) found from the investigating the role of self-efficacy in predicting symptomatology and health services utilization of adult patients with sickle cell disease that less pain severity was associated with higher level of self-efficacy (Edwards, Telfair, Cecil, & Lenoci, 2001). Scharloo, et al. (2000) found that decreased disease severity as perceived by percentage of affected skin in patients with psoriasis was associated with better physical, social, and role functioning, better mental health, less pain, and lower levels of depression.

Severity of illness and patient perception of hospital care are associated. Cleary and colleagues (1991) found from a national telephone survey about selected aspects of
care in adult patients recently discharged from medical and surgical services that patients who reported their health as poor had average problem of care scores that were almost twice as high as those of patients who reported excellent health (Cleary et al., 1991).

**Duration of Illness and Patient Outcomes**

Duration of illness is measured as the time from diagnosis of the current disease until this current admission. The relationship between duration of illness and the confidence in self-care abilities as well as perception of being well-cared for is not clearly understood. However, it is recognized that duration of illness could support confident in self-care abilities. Chronically ill patients could become experts in self-care because they have experience managing their illness before hospitalized, which might also support their confident in self-care compared to newly diagnosed chronically ill patients. Holman and Lorig (2004) noted that the most important outcome of learning experience was growth in the participant’s confidence that she or he could cope with disease consequences.

On the other hand, chronically ill patients may inhibit their confidence in self-care abilities when they turn out to have some other disorders. It is recognized that duration of illness affects health-related quality of life, which may be mediated by self-care abilities. A study revealed that patients with pulmonary artery hypertension who had longer duration of illness reported impairments in all domains (i.e., energy, emotional reaction, pain, physical mobility, sleep, and social isolation) of health-related quality of life (Shafazand, Doyle, & Gould, 2004).
Except for patients experiencing hospitalization, duration of illness should not have an effect on patient perception of being well-cared for because perception of being well-cared for is considered related to each admission episode. However, newly hospitalized patients might have an ideal for health care service and have expectations, which may effect the evaluation of perception of the care received.

*Illness Representation and Patient Outcomes*

In 1995, Curtin and Lubkin defined chronic illness from a nursing perspective as an irreversible presence, accumulation, or latency of disease states or impairments that involve the total human environment for supportive care and self care, maintenance of function, and prevention of further disability (Lubkin & Larsen, 2002). Regarding the complexity of symptoms and problems, patients with chronic illness require integrated care within their daily lives. The self-regulation model developed by Leventhal and colleagues (1992) provides an understanding of how patients with chronic illness deal with their health threats and lives. This model proposes to explain illness-related behavior within the context of chronic illness patients (Leventhal, Diefenbach, & Leventhal, 1992).

Leventhal’s model of self-regulation proposes that self-regulation is a function of the representation of health threats and the targets for ongoing coping established by the representation, the procedures to regulate these targets, and the appraisal of coping outcomes (Leventhal et al., 1992). The goal of this model is to understand self-regulatory processes by understanding how people define or represent the illness threat and how they proceed to cope with it. This model is based on three basic propositions (Leventhal
et al., 1998). First, people are active self-regulating problem solvers in the health area. They see and define their world, select and elaborate coping procedures to manage threats, and change their representation of problems when they receive negative feedback. Second, problem-solving processes occur in context. Finally, the energy expanded to enhance health and to prevent and/or cure disease is directed at what is perceived to be the most immediate and urgent threat and is limited by resources and a satisfaction rule. This model focuses on two independent processing systems representing a self-regulative system. The first system is the cognitive processing system, creating the psychologically objective representation of the health threats with its coping procedures and evaluative processes. The second system is an emotional processing system, creating psychologically subjective representation that deals with the feeling states and the coping procedures and appraisal rules for the management of emotion (Leventhal et al., 1992).

Illness representation is a major concept in this model and refers to an individual’s mental representation of his/her disease (Leventhal, Meyer, & Nerenz, 1980). In 1998, Leventhal and colleagues clearly defined illness representation as people’s definition of disease threats, as well as the coping procedures used for threat control. Illness representation includes five contents or attributes that define the nature of health threats. First, identity refers to how the patient describes the disease, from labels for the disease and its symptom indicators. Second, time-line refers to how the patient perceives whether the threat is acute, cyclic, or chronic. Third is the patient’s conception of consequences which can include physical, social and economic consequences. Fourth, antecedent causes refer to beliefs about the etiology of the illness, such as, injury,
infection, and genetic weaknesses. Finally, the potential for cure and/or control refers to the extent to which the patient perceives the illness is amendable to control or cure. These attributes show interrelationships. For example, a strong belief that the illness can be cured or controlled is associated with short perceived illness duration and relatively minor consequences. According to these attributes, the representative, coping procedures, and appraisal processes are constantly changing and being updated.

The advantage of this model is that it allows one to integrate factors at the level of the individual and the social systems, which in turn affect individual behaviors. Leventhal and colleagues (1998) noted that the self-regulation model takes into account the individual’s views of their environments as well as of themselves. Personal factors such as knowledge of disease; situational factors, such as, individualized appointments, reduced waiting times, and reduced costs; and motivational factors, such as, social support are considered to affect self-regulation (Leventhal et al., 1980). Moreover, cultural and social information are also integrated in this model because the problem-solving processes occur in a cultural and social context. Therefore, it is recognized that this model presents a comprehensive perspective leading to the understanding of human behavior in relation to illness experience.

Leventhal and colleagues (1992) used their model to promote an understanding of patient adherence to treatment regimens (Leventhal et al., 1992). When an individual experiences illness, a cognitive representation of the illness is constructed to make sense of the illness. The representations are activated and elaborated on the basis of relevant cues (e.g., symptoms and health-related information); and when a health threat creates a
problem for the individual, problem-solving proceeds by formulating goals, which in turn
generate action plans (Leventhal et al., 1998). The accumulated experience from others
plays a major role in the construction of representations, and in the acquisition, selection,
and performance of coping procedures (Leventhal et al., 1998).

The current framework in this study is focusing on the relationships between
patient’s illness representation and patient confidence in self-care abilities and patient
perception of being well-cared for. In a study demonstrating relationships between illness
representation and patient self-efficacy, particularly confidence in general, diet, and
perception and self-efficacy following a cardiac event. The illness perception was based
on the Leventhal’s self-regulatory model and measured by the Illness Perception
Questionnaire (IPQ). The definition of perceived self-efficacy was based on Bandura’s
self-efficacy expectation, which referred to a belief about what one can do under different
sets of conditions with whatever skills one possesses (Bandura, 1997). It was found that
general self-efficacy was significantly related to the three components of illness
representation i.e., consequences, identity, and control/cure. The relationships indicated
that patients with high general self-efficacy were more likely to view their heart condition
as having fewer consequences for their lives, to feel that they were in control of the
situation. Patients with more control and more self-efficacy reported fewer symptoms.
Exercise self-efficacy was negatively related to identity and positively related to timeline,
and control/cure. Diet self-efficacy was positively related to timeline. It was also revealed
that consequence was a predictor of general self-efficacy; timeline was a predictor of
exercise and diet self-efficacy (Lau-Walker, 2004). In addition, there is evidence to support the relationship between illness representation and self-efficacy. Opertot (2004) found the relationship between coping styles resulted from patient illness representation and self-efficacy for self-care in female caregiving spouses and daughters of Alzheimer’s Disease patients. It was suggested that as one engaged in more problem-focused coping style, self-efficacy was likely to be high (Opertot, 2004).

Petrie and colleagues (1996) conducted a longitudinal study to examine the prediction of illness perceptions of patients with myocardial infarction on attendance at a cardiac rehabilitation course, return to work, disability, and sexual dysfunction and founded that patient’s illness perceptions or beliefs after a myocardial infarction were important determinants of their recovery after discharge from hospital. Illness perceptions measured on admission were associated with attendance at rehabilitation programs. Patients who believed that their illness was amenable to cure or control were more likely to attend rehabilitation programs (Petrie et al., 1996). Similarly, Cooper and colleagues (1999) prospectively studied the predictions of illness beliefs held during hospitalization by patients who had suffered acute myocardial infarction or who had undergone coronary artery bypass graft surgery on cardiac rehabilitation attendance. They found that patients with stronger beliefs that their conditions were controllable would subsequently take appropriate action such as attendance at cardiac rehabilitation (Cooper, Lloyd, Weinman, & Jackson, 1999).

The relationship between patient illness representation and patient perception of being well-cared for is not well understood. However, one study did demonstrate a
relationship between illness representation and emotional status. Jackson and colleagues (2004) assessed the relationships between and among multidimensional nature satisfaction, emotional distress and illness perception in patients with medically unexplained symptoms (MUS) attending cardiology and neurology out-patient clinics. It was found that lower satisfaction was associated with the perception of one’s illness as having a greater impact on one’s life (consequences), with having more symptoms (identity), and with the belief that one’s illness was likely to last for a longer time in the future (timeline). Also, lower satisfaction was associated with a tendency to have a lower expectation of a successful response to treatment (cure). It was also revealed that illness representation related to the levels of depression (Jackson, Kincey, Fiddler, Creed, & Tomenson, 2004). Therefore, it is hypothesized in this study that the more positively patients perceive their illness representation, the more they perceive being well-cared for.

Nursing Unit Characteristics

A literature study illustrated that several nursing domains influence patient outcomes. These domains include communication and information, participation and involvement, interpersonal relationships, medical-technical competence, and health care organization (e.g., individual care planning, and nursing documentation) (Johansson, Oleni, & Fridlund, 2002). Many studies focus on the relationships between nursing unit characteristics and adverse patient outcomes. However, the goals of the nursing profession are to prevent health related problems as well as to maintain and improve health status. Therefore, it is challenging to explore the relationship between nursing factors and patient outcomes relating to patient perceptions of their ability to maintain
and improve their health. With regard to this current study, nursing unit characteristics that are considered affecting patient confidence in self-care abilities and patient perception of being well-cared for include nursing staff demographics, nurse staffing, nursing unit competency, and group cohesion.

**Nursing Staff Demographics and Patient Outcomes**

It is recognized that nurses’ qualification has some association with patient outcomes. Achieved educational of nurses is associated with a broader range of abilities and quality of care. DeBack and Mentkowski (1986) found when differentiating nurse performance that nurses with baccalaureate degrees demonstrated more nursing competencies when compared with their associate degree or diploma colleagues. Aiken and colleagues (2003) reported that a 10% increase in the proportion of nurses holding a bachelor’s degree was associated with a 5% decrease in both the likelihood of patients dying within 30 days of admission and the odds of failure to rescue. Nurses with more experience provide higher-quality care (Aiken, Clarke, Cheung, Sloane, & Silber, 2003). A study conducted at the patient care unit level by Blegen, Vaughn, and Goode (2001) used a descriptive design to explore the effect of experience and education of nurses on quality of care delivered in acute-care hospitals. Quality of care was measured by lower rate of medication errors, and patient falls. Controlling for patient acuity, hours of nursing care, and staff mix, the results demonstrated that units with more experienced nurses had lower medication errors and patient falls (Blegen et al., 2001). Therefore, achieved educational level and experience working in medical care units are included in this framework as well.
Nurse Staffing and Patient Outcomes

Today’s pressures for hospital cost control make it imperative to determine whether differences across acute care hospitals in nurse staffing can be statistically shown to relate to measurable differences in important patient outcomes (Gallagher & Rowell, 2003). Because of the financial issues and changes in health care technology, the importance of nurse staffing as a component of quality is illustrated by its high priority in funding agencies and accrediting agencies. Registered nurse staffing is a major factor in ensuring hospital production efficiency because nurses directly participate in the core technology of hospitals, the delivery of patient care, and also represent a significant portion of a hospital’s operating budget (Bloom, Alexander, & Nuchols, 1997). The focus on nurse staffing is driven by a view that nurse staffing has a direct impact on quality and safe care (Jennings & McClure, 2004). Although findings are mixed, evidence reports supported that nurse staffing is linked to quality care (Blegen et al., 2001; Mark, Salyer, & Wan, 2003).

The American Nurses Association (ANA, 1995) categorized staff mix in a structural indicator, and defined it as the ratio of total nursing staff to patients. There are various measures of nurse staffing levels. Researchers usually include multiple parameters to measure nurse staffing. The following are those parameters used in studies.

1) Ratio of nursing staff to patient, nurse to bed ratio, and RN hours per patient day (HPPD) reflecting nurse availability characterize the number of hours nurses spend with patients (e.g., Khumyu, 2002; Seago, 2005; and Sasichay-Akkadechanunt et al., 2003)
2) Skill mix: the proportion or percentage of hours of care provided by one category of caregiver divided by the total hours of care, such as ratio of RNs to total nursing staff (e.g., Blegen & Vaughn, 1998; Mark et al., 2003; McGillis-Hall et al., 2004; Sasichy-Akkadchanunt et al., 2003)

3) Full time equivalents (FTEs) (e.g., Blegen & Vaughn, 1998).

4) Mean patient load across all staff registered nurses (Aiken et al., 2003)

The ratio of nursing staff to patients is measured by total hours of nursing care per patient day or number of total staff per number of patients in nursing unit. The ratio of registered nurse to total nursing staff is measured by the proportion of those hours of care delivered by registered nurses (RN proportion or staff mix) or number of nursing staff per number of registered nurses. Nursing hours per patient day is the total number of productive hours worked by nursing staff with direct care responsibilities on acute care units per patient day. The calculation of these hours provides an estimate of the workload and consequently helps the managers and administrators determine the number of staff required to provide safe and effective nursing care to all patients on the unit.

Investigations of nursing systems explore the association between nurse staffing and outcomes related to various categories, such as patient safety outcome, adverse patient outcomes, health-related patient outcomes, and patient satisfaction. There is a group of nursing system scientists focusing their studies on nurse staffing models and patient outcomes, particularly patient safety outcomes and adverse patient outcomes. Blegen and Vaughn (1998) and Blegen, Goode, and Reed (1998) conducted correlational studies to investigate the relationships among total hours of nursing care, registered nurse
(RN) skill mix, and adverse patient outcomes including medication errors, patient falls, decubiti, urinary tract and respiratory infections, patient/family complaints, and death. The findings showed that the relationship between RN proportions and outcomes of care was curvilinear. When the RN proportion increased, rates of adverse outcomes decreased up to 87.5%. Above this level, the adverse outcomes rates increased as the proportion of RNs increased. The researchers concluded that the higher the RN skill mix, the lower the incidence of adverse outcomes in acute care units (Blegen et al., 1998). In addition, Blegen and colleagues (2001) included nurse staffing in their theoretical model and explored the relationship between the quality of patient care and the education and experience of the nurses providing that care. The analysis showed that staff mix was negatively correlated with medication errors and patient falls (Blegen et al., 2001).

Another study conducted by McGillis-Hall and colleagues (2004) evaluated the effect of different nurse staffing models including RN/registered practical nurse (RNs/RPNs), all-RN staff mix, proportion of regulated to unregulated staff (URW), and RN/RPN/URW staff mix on patient falls, medication errors, wound infections, and urinary tract infections. The results showed that proportion of professional staff was significant related to medication errors and wound infections. Units with lower proportion of professional nursing staff (RNs/RPNs) had a higher number of medication errors and wound infections (McGillis-Hall et al., 2004).

Aiken and colleagues (2002) calculated nurse staffing as mean patient load across all staff registered nurses who reported having responsibility for at least 1 but fewer than 20 patients on the last shift they work. The research showed the relationship between
nurse staffing and patient mortality and failure to-rescue (mortality following complications), when other factors were ignored and after patient and hospital characteristics were controlled (Aiken, Clarke, Cheung, Sloane, & Silber, 2002). The analysis demonstrates that the odds of patient mortality increased by 7% for every additional patient in the average nurse’s workload in the hospital, which implies that substantive decreases in mortality rates could result from increasing registered nurse staffing, especially for patients who develop complications (Aiken et al., 2002).

However, in 2003, Aiken and colleagues used the same data from the study in 2002 and found that there were only slight changes in the parameters estimating the nurse staffing effect, when controlling for nurse education. However, the improved outcomes associated with higher levels of BSNs in a hospital were found to be independent of and additive to the associations of superior outcomes in hospitals with better nurse staffing (Aiken et al., 2003).

In Thailand, it was revealed that there is an association between nurse staffing and patient outcomes. Khumyu (2002) studied the relationships between nurse staffing, nurses’ job satisfaction, and patient satisfaction with nursing care with public hospitals in Thailand and found that nurse-to-patient ratio significantly correlated with patient satisfaction. Sacichay-Akkadechanunt and colleagues (2003) studied the relationship between nurse staffing and patient outcome, the in-hospital mortality. The nurse staffing was measured through the ratio of total nursing staff to patients, the proportion of registered nurses to total nursing staff, the mean years of registered nurse experience, and the percentage of the Bachelor of Science in nursing degree prepared nurses. The study
showed that the ratio of total nursing staff to patients was significantly related to the outcome of in-hospital mortality (Sacichay-Akkadechanunt et al., 2003).

Nurse staffing impacts health-related patient outcomes. For instance, McGillis-Hall and colleagues (2003) conducted a repeated-measures design to investigate the prediction of nurse staffing models on patient outcomes of functional status, pain control, social functioning, and patient satisfaction with nursing care in adult medical-surgical and obstetric patients admitted to 19 teaching hospitals in the province of Ontario, Canada. Three nursing staff-mix variables included in the nurse staffing models were a staff-mix comprised of (a) registered nurses and registered practical nurses (RN/RPNs), and (b) registered nurses (RNs) only. They found that, controlling for other possible determinants of health outcomes such as base line health status, patient age, and complexity of illness, nursing staff-mix was a significant predictor of functional status, pain control, social functioning, and patient satisfaction. Higher proportions of RN/RPNs were associated with better health and satisfaction outcomes (McGillis-Hall et al., 2003).

There is evidence demonstrating that nurse staffing relates to patient satisfaction. For example, Mark, et al., (2003) tested the impact of the professional practice model on organizational and patient outcomes in 136 general medical-surgical nursing units. Skill mix was included in the model as a nursing unit characteristic. The skill mix was defined as the proportion of nursing staff who were registered nurses to the total nursing staff. The findings showed that registered nurse skill mix was associated with higher mean levels of patient satisfaction ($r = .18, p < 0.01$) (Mark et al., 2003). Similarly, Vahey and colleagues (2004) examined the effect of the nurses’ work environment and nurse
burnout on patients’ satisfaction with their nursing care in 20 urban hospitals across the United States. The findings showed that patients in the units with adequate staff, good administrative support for nursing care, and good relations between doctors and nurses reported high satisfaction with their care (Vahey et al., 2004). In addition, Moore and colleagues (1999) used data from the nursing report card indicators developed by ANA capture quality of care to investigate the predictors of outcome indicators in acute care settings. The results showed that the most consistent predictor of the outcome indicators was the percentage of the nursing staff (RNs) caring for the patients. It was also found that the percentage of RNs on the unit was a significant positive predictor of the patient satisfaction outcome indicators, however not a significant predictor of the adverse outcome indicators (Moore et al., 1999). In addition, Larrabee and colleagues (2004) investigated the influence of registered nurse (RN) job satisfaction, context of nursing care, structure of care, patient-perceived nurse caring, and patient characteristics on patient satisfaction. They found that the ratio of patients to RN matched to patient days of hospitalization; however, ratio of RNs to all nursing staff was not related to patient satisfaction (Larrabee et al., 2004).

Nursing Unit Competency and Patient Outcomes

The Oxford dictionary describes the word *competence* or *competency* as the quality or extent of being competent. The Merriam-Webster dictionary (1993) defines competence and also competency as the quality or state of being functionally adequate or of having sufficient knowledge, judgment, skill, or strength as for a particular duty or in a particular respect, and as a range of ability or capacity. The Miller-Keane encyclopedia
and dictionary of medicine, nursing, and allied health defines competence as a principle of professional practice, identify the ability of the provider to administer safe and reliable care on a consistent basis (O’Toole, 2003). The National Council of State Boards of Nursing (1996) defines competency as the application of knowledge and the interpersonal, decision-making, and psychomotor skills expected for the nurse’s practice role, within the context of public health, welfare, and safety.

The term competence and competency in the nursing literature are used with no particular restriction on the meaning. DeBack and Mentkowski (1986) described nurse performance as a set of broad competencies that can be developed in baccalaureate nursing programs and also observed in practice of experienced nurses. Competence is made up of several integrated components including knowledge, skills, affect, motivation, and self-perception, which demonstrate the outcomes of educational processes (DeBack & Mentkowski, 1986).

McConnell (2001) stated that many nursing authors (e.g. Ashworth & Morrison, 1991; Benner, 1982; Johnson, & Opfer, VanCura, & Williams, 2000) define competence as the ability to perform the activities. For example, in 1988, the Standard Training Agency of the United Kingdom defined competence as the ability to perform the activities within an occupation and it embodies the ability to transfer skills and knowledge to new situations within the occupational area (Ashworth & Morrison, 1991). From the perspective of organizational healthcare, competency relates to a state in which the individual has the requisite or adequate ability or qualities to perform certain functions (Ross, Wenzel, & Mitlyng, 2002). Moreover, the Joint Commission
Accreditation of Health Organization (JCAHO) underscores competency of nursing staff on job responsibilities, and refers competence to the person’s ability to perform required activities (Joint Commission Accreditation of Health Organization, 2005).

Professional nursing competence is a stage of nursing skill. Benner (1984, 2001) defines competence of professional nursing as one stage of skill acquisition from novice through competence to expert and as nurse who has been on the job in the same or similar situations two or three years. It is a skill acquired through formal knowledge and clinical experience. Nurses in this stage have a feeling of mastery and the ability to cope with the many contingencies of clinical nursing. It is developed when the nurse begins to see his or her actions in terms of long-range goals or plans of which he or she is consciously aware (Benner, 1984, 2001). Bishop and Scudder (2001) stated that the competency is the minimum requirements for being a nurse.

The Nursing Council of Thailand first endorsed the core competency in nursing in 1985 and redefined in 1997 (Thailand Nursing Council, 2003). Although, the definition of nursing competency is not identified, the nursing competency is developed for the purpose of being qualified of registered nurses in Thailand. These competencies are nursing practice that showing ethical nursing practice according to rule and professional act, health promotion and self-care, prevention and immunization, rehabilitation, basic medical cure regarding the rule of the Nursing Council, teaching and counseling, effective communication, leadership and self management, respect to patient rights, research awareness, information technology, continuous self development, and professional development (Thailand Nursing Council, 2003).
As a result, nursing competency in this study refers to the perceptions of nursing staff of their ability to perform their roles with their skills and knowledge. Abilities are evolved in the context of the scope and domains of practice in nursing and in response to client health needs. Consistent with standards of nursing practice, nurses need to accomplish patient education, provision of direct care using clinical skills, monitoring and ensuring quality of health care, interpersonal communication, and leadership abilities. Competency relates to the abilities of the workgroup and not the individual nurse.

Core components of nursing care are also considered as the domains of nursing competence. It was stated in the American Nurses Association’s official response to the Pew Taskforce Report on Healthcare Workforce regulation that registered nurses must be competent in the physical, psychosocial, spiritual, and cultural components of care (ANA, 1997). Another group of core competencies, the American Association of Colleges of Nursing (AACN) developed a list of 16 competencies grouped within three general categories consisting provision of direct care competencies, communication competencies, and management competencies (Schwirian, 1998). These competencies as well as experience and education of the nurse are used to differentiate nursing practice.

According to literature review, it is concluded that the common domains required for nursing competency are patient education, direct care and clinical skills, monitoring and ensuring quality of care, interpersonal communication, and leadership.
Patient education refers to information and training provided to patients and their families so the patients can stay well and adjust a treatment according to a plan developed by health care team.

Direct care and clinical skills are nursing activities responsible for providing physical and psychological care directly to patients and families in acute care settings, which are based on a professional nursing standard. The nursing standards require that the nurses first access the data relevant to the patient’s needs, determine the diagnosis or issues raised by the data, identify outcomes for a plan individualized to patients, develop a plan to obtain outcomes, and implement the plan by coordination and documentation of the designated care plan (ANA, 2003).

Monitoring and ensuring quality of care refers to all actions taken to establish, promote, and improve the quality of health care. The quality of care is the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge (Institute of Medicine, 2003).

Interpersonal communication refers to written, verbal, and nonverbal languages, which are established between nurses and patients, families, and other healthcare professionals. The goals of communication are to achieve the optimal care through the development of trust, acceptance, and respect among patients, their families, and health team members. Fosbinder (1994) used an ethnographic approach to reveal processes of interpersonal competence of nurses while providing nursing care. The processes included
translating, getting to know you, establishing trust, and getting the extra mile. These four processes demonstrated interpersonal skills important to patients.

Leadership in this meaning is not a formal position. It is the process of influencing others, in some type of group, to work together in a productive and satisfying manner toward the achievement of the group’s goals. Leadership skills concern how to effectively work with people as groups, teams, and organization.

Competencies provide consumers and professionals with some common notion of the standards and expectations of professionals and thereby enable all parties to relate and function more consistently and successfully (Sutton & Arbon, 1994). Managers consider that the key to success is competence. Clinical expertise and competence in one’s own role are basic to establishing credibility and trust with others (Urden, 2004), which are major factors contributing to effective relationships in nursing context.

Competence can be attributed to a person, a team of people, or the whole organization (Westgaard, 1999). In nursing, teamwork is an essential feature of caring nursing practice. Nurses working in teams to plan and do their daily work, and nurses also are members of other teams. All of these contribute to the recovery of individual patients (Ashworth & Morrison, 1991). Therefore, it is recognized that desired patient outcomes are contributed by team nursing competency. For instance, Blegen and colleagues (2001) highlighted the influence of nurses’ length of experience on competence and performance from exploring the effects of nurse experience and education on quality of care and found that controlling for patient acuity, hours of nursing care, and staff mix, units with more experienced nurses had lower medication errors and
lower patient fall rates. It is suggested that the more experienced nurses perform better than less experienced nurses (Blegen et al., 2001).

Patient perception of staff’s competency, can predict patient satisfaction. Andaleeb (1998) tested a managerial model and found that perceived competence of staff and their demeanor had the great impact on customer satisfaction. Kurata and colleagues (1994) Found from the study of patient satisfaction with actual medical care received at government-subsidized health care facilities in Kyoto, Japan and in California, and suggested that patient confidence in the health care provider’s technical skills and competence is an important predictor of overall satisfaction with medical care in the US and Japan. However, the researchers recommended that these were patient perception, which may or may not reflect actual skill or competence levels (Karuta, Watanabem, McBride, Kawai, & Anderson, 1994).

It can be concluded from the review of nursing competency that the concept of nursing competency has many facets. The interpretation of nursing competency depends on its operational definitions, domains, and framework. Nurse researchers take more effort to understand nursing competency from various perspective leading nursing researches related to competency focuses more on the identification of competency domains and perceived competency. Few studies explore the contribution of nursing competency on its outcomes, particularly nursing sensitive patient outcomes. To value for nursing competency, this study aims to explore the relationships between nursing competency and patient’s confidence in self-care and patients’ perceptions of being well-cared for.
Group Cohesion and Patient Outcomes

Cohesion has been proposed to be an important determinant of work group performance (Mullen & Copper, 1994). Hogg (1992) defined cohesion from a social psychological perspective as attraction to the group. With regard to nursing organization, group cohesion is an indicator of integration (Hinshaw, Smeltzer, & Atwood, 1987). Group cohesion is defined in terms of how integrated a nursing staff member felt as part of the organization and colleague environment (Hinshaw et al., 1987; and Leveck & Jones, 1996). Verran (1995) defined group cohesion as a result of all forces influencing members to stay in a group.

Group cohesion is affected by various factors such as management style within unit and team-building model, experience, and setting. Leveck and Jones (1996) studied the relationships between the practice environment, quality of nursing care, and the retention of RN staff on nursing units. It was found that units where nurses perceived a participative management style reported higher levels of group cohesion. Lucas, Atwood, and Hagaman (1993) found that nurses with more hospital experience had more group cohesion; and medical-surgical nurses experienced less group cohesion than nurses on the other units. On the other hand, group cohesion was considered as a consequence of pediatric oncology nurses’ perceived stress. Although the testing of the model was not statistically significant, the findings showed that perceived stress scores accounted for some of the variance in the group cohesion scores (Hinds et al., 1998).

Group cohesion and group communication are associated. Dimeglio and colleagues (2005) conducted a quasi experimental, interrupted time-series design to test
the effects of a team-building intervention on in-patient units. The intervention focused on organizational development incorporating a focus on system, teams, and change. The results showed the improvement in group cohesion, RN-RN interaction, and job enjoyment after nursing staff participated in the intervention (Dimeglio et al., 2005). In addition, there is an association between clinical competency and team cohesiveness. The groups of nurses who reported high levels of professional autonomy and perceived themselves as expert clinicians presented themselves as an ultimate team, described as cohesive, highly skilled, and expert at training newer nurses (Dimeglio et al., 2005).

The study of relationships between nursing group cohesion and patient outcomes is limited. However, group cohesion is a variable usually studied in relation to job satisfaction and group performance, which in turn influences patient outcomes. Group cohesion is important for increasing job satisfaction (Hinshaw, Smeltzer, & Atwood, 1987). Ingersol and colleagues (1996) measured the effect of an enhanced professional practice model on perception of groups and nurse leaders. The results showed that change in perception of work group and leader rather than job satisfaction may be an early indication of a favorable outcome of planned change. The researchers stated that nurse perception of work group was found associated to job satisfaction in several studies, which in turn contributes to positive patient outcomes (Ingersol, Schultz, Hoffart, Ryan, 1996).

Many studies include group cohesion within the context of the work environment, which is considered to influence organizational outcomes. The variables considered consequences of group cohesion include anticipated turnover, job satisfaction, and nurse
retention. Shader and colleagues (2001) studied the relationships between job stress, group cohesion, stability of schedule, and anticipated turnover of staff nurses and nurse managers employed on medical-surgical and intensive care units and found that the more the job stress, the lower group cohesion, the lower work satisfaction, and the higher the anticipated turnover. In addition, job stress, work satisfaction, group cohesion, and weekend overtime were predictors of the anticipated turnover (Shader, Broom, Broom, West, & Nash 2001). Larrabee and colleagues (2003) conducted a predictive design for job satisfaction, empowerment, and intent to leave. Potential predictors were nurse attitude, context of care, and structure of care. Group cohesion was conceptualized as structure of care. It was found that hardiness, transformational leadership, RN-MD collaboration, RN vacancy rate, and group cohesion indirectly predicted nurse job satisfaction through psychological empowerment. Nurses had higher psychological empowerment when they had higher hardiness scores, viewed their nurse managers as a transformational leader, reported collaborating with physicians in patient care, and reported linking and feeling a part of their work group. However, group cohesion and nurse vacancy rate were weak predictors of psychological empowerment. Psychological empowerment explained the majority of job satisfaction variance (54%) (Larrabee et al., 2003).

It can be concluded that group cohesion is the significant integrated characteristics in nursing unit that influences nursing performance, which in turn affects patient outcomes. According to the lack of an evidence to support the relationship
between nursing group cohesion and patient outcomes, this study purposes to explore this proposing relationship.

Summary

Results from this literature review found from a major conceptual framework in nursing systems, the QHOM, can lead to the exploration of the relationships between major concepts in this current theoretic framework. The two cognitive behavioral theories, illness representation and self-efficacy, included in this framework provide a crucial understanding of the factors that influence health-related behaviors, such as self-care abilities. In addition, concepts related to human resource and organization, such as competency and group cohesion also demonstrate the linkage to nursing-sensitive patient outcomes of interest. It is concluded from this theoretical framework that the patient and nursing unit characteristics can make changes in patient outcomes. There are few researches demonstrating these relationships within a nursing system model. This study aims to explore these relationships within the context of nursing unit as well as patient characteristics.
CHAPTER 3: METHODOLOGY

This study was designed to examine the effects of patient and nursing unit characteristics on nursing-sensitive patient outcomes. This chapter describes the methodology of this study consisting of research design, sample, setting, measurement, data collection, and data analysis. In addition, the procedures for protection of human subjects are also included.

Research Design

A cross-sectional correlational design was used to examine the effects of patient and nursing unit characteristics on nursing-sensitive patient outcomes. Patient characteristics were patient demographics (i.e., age, gender, and education), clinical factors (i.e., duration of illness and severity of illness) as well as illness representation. Nursing unit characteristics are nurse education, nurse experience, nurse staffing, nursing unit competency, and group cohesion. Nursing-sensitive patient outcomes are patient’s confidence in self-care and patient’s perception of being well-cared for.

Sample and Setting

The samples in this study were both patients and nurses. The patients were chronically ill patients hospitalized in medical care units. Selection criteria were based on at least 1 diagnosis of 6 major chronic diseases including: hypertension, non-insulin dependent diabetes mellitus, chronic obstructive pulmonary disease, heart disease, coronary artery heart disease, and cerebrovascular accident. Sampled nurses were staff nurses currently working in the same medical care units as the sampled patients within 3 general hospitals and a university hospital located in Bangkok, Nonthaburi, and
Pathumthani Provinces, Thailand. The 3 general hospitals are under the Ministry of Public Health. There were 8 medical care units sampled in this study, two units from each hospital.

Criteria for Sample Selection

Patients

The sample consisted of hospitalized patients in 1 of 8 medical care units with a diagnosis of at least 1 of the following 6: hypertension, non-insulin dependent diabetes mellitus, chronic obstructive pulmonary disease, heart disease, coronary artery heart disease, and cerebrovascular accident. Inclusion criteria for patients were (a) adult patients age 18 years or older, (b) able to respond to questions, (c) directly admitted from outpatient or emergency departments to a medical care unit, (d) hospitalized at least 3 days, and (e) discharged directly home. Exclusion criteria were (a) referred to another healthcare service, and (b) unable to respond to questionnaires.

Nurses

All staff nurses consisting of registered nurses (RNs) and technical nurses (TNs) working in medical care units of these hospitals were included in this study. Inclusion criteria for nurses were (a) those who have worked in the medical care units for more than 6 months, and (b) those who provide direct nursing care.

Sample Size

A power analysis, a procedure for estimating sample size to avoid committing a type II error, was conducted to determine how many subjects should be included in this study. Power analysis ensures that the sample size of the study is large enough so that the
statistical tests can detect similarity or dissimilarity. Cohen and Cohen (1983) proposed that the test of a null hypothesis can be viewed as a complex relationship among the four parameters including the power of the test, the region of rejection of the null hypothesis as determined by the alpha (\( \alpha \)) level, the sample size, and the magnitude of the effect in the population. These four parameters are related. Therefore, when any three of them are fixed, the fourth can be determined.

According to Cohen and Cohen (1983), power can be estimated from a function of \( n^* = (L/f^2) + k + 1 \); where \( n^* \) is the number in the sample, \( L \) is a noncentrality parameter, \( f^2 \) is the effect size, and \( k \) is the number of the predictors for the multiple regression testing. \( L \) can be obtained from a table and is defined by Cohen and Cohen (1983) as a function of power and the number of independent variables at a given level of alpha. The effect size for regression statistics explains proportion of variance in dependent variables accounted for by the sources under study. The effect size can be calculated from the squared multiple regression coefficient value \( (R^2) \). \( f^2 = R^2 / (1 - R^2) \).

There are widely accepted conventions for defining small, medium, and large effects (Murphy & Myors, 1998). Cohen (1988) defined the effect size \( (f^2) \) values of .02, .15, and .35 as small, medium, and large effect size, respectively. The specifications for calculation this formula are:

\[ \text{Alpha (}\alpha\text{)} = .05; \quad \text{degrees of freedom of numerator of the } F \text{ ratio or simultaneously the number of independent variables (} k \text{)} = 12; \quad \text{medium } f^2 = .15; \quad \text{and power of analysis} = .80. \]
affect patient outcomes. From the specifications, $L$ value in the tabled by Cohen and Cohen (1983) equals 17.34.

Substituting in the formula gives $n^* = (17.34/0.15) + 12 + 1 = 128.6$. Therefore, the necessary sample size required for this study should not be less than 129. In addition, the recommended minimum 10:1 ratio of subjects to independent variables for decreasing bias test in regression analysis was met (Prescott, 1987).

To ensure that the sample represents chronically ill patients for each unit, stratified sampling was used in this study. A sample was drawn from each unit by determining the percentage of each patient group compared to the total number of sample. The number of the sample from each group was calculated from the percentage of the average number of discharged chronically ill patients in each unit for the last 6 months; for example, in the male unit of the first hospital (see Table 1), the average number of discharged patients was 46. Compared to the total number of discharged patients in 8 units (311), this unit contributed 15% of the discharged patients $[(46*100)/311]$. Then, calculate 15% of 129, which gave 19 patients from the first unit. Finally, sum these numbers from units 1 to 8, to obtain a total sample of 129 (see Table 1).
### Table 1.

**Setting and Sample**

<table>
<thead>
<tr>
<th>Hospital</th>
<th>Unit</th>
<th>Average monthly discharge (last 6 months)</th>
<th>Percent of patients drawn (%)</th>
<th>Expected sample size (N)</th>
<th>Number of response patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Male</td>
<td>46</td>
<td>15</td>
<td>19</td>
<td>22</td>
</tr>
<tr>
<td>1</td>
<td>Female</td>
<td>51</td>
<td>17</td>
<td>22</td>
<td>18</td>
</tr>
<tr>
<td>2</td>
<td>Male</td>
<td>35</td>
<td>11</td>
<td>14</td>
<td>12</td>
</tr>
<tr>
<td>2</td>
<td>Female</td>
<td>42</td>
<td>14</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td>3</td>
<td>Male</td>
<td>23</td>
<td>7</td>
<td>9</td>
<td>13</td>
</tr>
<tr>
<td>3</td>
<td>Female</td>
<td>32</td>
<td>10</td>
<td>13</td>
<td>14</td>
</tr>
<tr>
<td>4</td>
<td>Male</td>
<td>44</td>
<td>14</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td>4</td>
<td>Female</td>
<td>38</td>
<td>12</td>
<td>16</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>311</td>
<td>100</td>
<td>129</td>
<td>130</td>
</tr>
</tbody>
</table>

**Data Collection and Measurement**

There were three sources of data including individual patient, individual nurse, and nursing administrative data. Patients were asked to complete four questionnaires including Patient Demographic and Clinical Factors Questionnaire, Brief Illness Perception Questionnaire (BIPQ), Self-Care: Condition Management Patient Questionnaire, and Patient Perception of Being Well-Cared For Scale. Nurses were asked to complete three questionnaires including Nurse Demographic Questionnaire, Nursing Unit Competency Scale, and Group Cohesion Scale. Nurse staffing data were obtained
from nursing administrative data for each unit and recorded in the Nurse Staffing Form (see Table 2). All data were collected in Thai language. All questionnaires both English and Thai versions are shown in Appendix A.

Table 2.

*Descriptions of Variables, Sources of Data, and Measurement*

<table>
<thead>
<tr>
<th>Variables</th>
<th>Sources of data</th>
<th>Measures</th>
<th>Level of measurement</th>
<th>Level of analysis</th>
<th>Scale measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient characteristics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patient Demographics:</td>
<td>Individual patient</td>
<td>Patient Demographics and Clinical Factors</td>
<td>Individual</td>
<td>Individual</td>
<td>Ratio (age);</td>
</tr>
<tr>
<td>Age, sex, education</td>
<td></td>
<td>Questionnaire</td>
<td></td>
<td></td>
<td>nominal (sex);</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>nominal (education)</td>
</tr>
<tr>
<td>Duration of illness</td>
<td>Individual patient</td>
<td>Demographic and Clinical Factors Questionnaire</td>
<td>Individual</td>
<td>Individual</td>
<td>Interval</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Severity of illness</td>
<td>Individual patient</td>
<td>Modified Rankin Scale</td>
<td>Individual</td>
<td>Individual</td>
<td>Ordinal</td>
</tr>
<tr>
<td>Illness representation</td>
<td>Individual patient</td>
<td>The Brief Illness Perception Questionnaire (BIPQ)</td>
<td>Individual</td>
<td>Individual</td>
<td>Ordinal</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nursing unit characteristics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nurse demographics:</td>
<td>Individual nurse</td>
<td>Nurse Demographic Questionnaire</td>
<td>Individual</td>
<td>Group</td>
<td>Nominal (education);</td>
</tr>
<tr>
<td>education, years of</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Interval (years of experience)</td>
</tr>
<tr>
<td>experience</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nurse staffing</td>
<td>Nursing administrative data</td>
<td>Nurse Staffing Form</td>
<td>Group</td>
<td>Group</td>
<td>Interval</td>
</tr>
</tbody>
</table>
Table 2 (continued).

Descriptions of Variables, Sources Data, and Measurement

<table>
<thead>
<tr>
<th>Variables</th>
<th>Sources of data</th>
<th>Measures</th>
<th>Level of measurement</th>
<th>Level of analysis</th>
<th>Scale of measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nursing Unit competency</td>
<td>Individual nurse</td>
<td>Nursing Unit Competency Scale</td>
<td>Individual</td>
<td>Group</td>
<td>Interval</td>
</tr>
<tr>
<td>Group cohesion</td>
<td>Individual nurse</td>
<td>The Group Cohesion Scale</td>
<td>Individual</td>
<td>Group</td>
<td>Interval</td>
</tr>
<tr>
<td>Patient’s confidence in self-care abilities</td>
<td>Individual patient</td>
<td>The Self-Care: Condition Management Patient Questionnaire</td>
<td>Individual</td>
<td>Individual</td>
<td>Interval</td>
</tr>
<tr>
<td>Patient’s perception of being well-cared for</td>
<td>Individual patient</td>
<td>The Patient Perception of Being Well Cared For Scale</td>
<td>Individual</td>
<td>Individual</td>
<td>Interval</td>
</tr>
</tbody>
</table>

Variable Definitions and Measures

*Independent Variables*

*Patient Characteristics*

Patient characteristics selected for this study included patient demographics, clinical factors, and illness representation. Patient demographics were age, gender, and education. Clinical factors were severity of illness and duration of illness. Illness representation illustrates patients’ cognitive and emotional representations related to their illness.
Age, gender, and education.

Age is the number of years from birth to this admission. Gender reflects concepts related to the social roles of male or female. Patient’s gender was categorized into male (0) and female (1). Education refers to the highest level of formal education. Educational levels were no formal education (0), primary school (1), secondary school (2), high school and vocational college (3), diploma (4), bachelor (5), post bachelor (6).

Severity of illness.

Severity of illness was defined as functional health, emphasizing physical disability. Patients’ severity of illness was measured by using the Modified Rankin Scale. This scale was developed by van Swieten, Koudstaal, Visser, Schouten, and van Gijn (1988). It is a Guttman type scale, which produces an ordinal unit of measurement. There are 6 levels of functional health in this scale. The scale begins with no symptoms at all (0); no significant disability, able to carry out all duties and activities (1); slight disability, unable to carry out all activities, but able to look after their own affairs without assistance (2); moderately disabilities, requiring some help, but able to walk without assistance (3); moderate-to-severe disability, unable to walk without assistance and unable to attend to own bodily needs without assistance (4); and severe disability, bedridden, incontinent, and requiring constant nursing care and attention (5). This scale is recognized as a validated measure. The construct validity of this scale was reported in a study that showed that mobility, disability in daily and instrumental activities, and living arrangement were strongly associated with Rankin scores (de Haan et al., 1995). Although, this scale is frequently used to access functional status in stroke patients, it had
been found appropriate for other groups of diseases, such as surgical patients. Rojas and colleagues (2005) reporting on the construct validity of this scale when used with surgical patients, found that two-thirds of surgical patients with a major diminution in functional impairment, as indicated by the Modified Rankin Scale, had an adverse occurrence during the hospital stay (Rojas et al., 2005). This scale has not previously been translated to Thai language. The author translated it and used it in this study.

_Duration of illness._

Duration of illness was measured as the number of months since diagnosis of the chronic disease which caused this current hospitalization.

_Illness representation._

Illness representation refers to a person’s definition of disease threats, and the coping procedures used for threat control (Leventhal et al., 1998). Illness representation includes five attributes that define the nature of health threats. They are identity, time-line, consequences, antecedent causes, and potential for cure and/or control. In this study, illness representation referred to hospitalized chronically ill patients’ definitions of diseases threats within the context of identity, time-line, consequences, antecedent causes, and potential for cure and/or control. Illness representation was measured by the Brief Illness Perception Questionnaire (BIPQ) developed by Elizabeth Broadbent and was translated into Thai by Napaporn Sowattanangoon (Broadbent, Petrie, & Weinman, 2005). The BIPQ was adapted from the Revised Illness Perception Questionnaire (IPQ-R) (Moss-Morris et al., 2002).
The IPQ-R is based on Leventhal’s Self-Regulatory Model. The IPQ-R has been studied in patients with various chronic diseases, such as asthma, diabetes, HIV, or hypertension. Factor analysis showed that there were seven factors including timeline (acute/chronic), timeline cyclical, consequences, personal control, treatment control, illness coherence, and emotional representation (Moss-Morris et al., 2002). All subscales demonstrated good internal reliability. Cronbach alpha coefficient for each subscale ranged from 0.79-0.91 (Jopson & Moss-Morris, 2003; Moss-Morris et al., 2002).

The BIPQ is a Likert format scale ranging from 0 to 10; except for one item related to causes, which requires that patients fill in the blank with the three most important perceived causes of their illness. The BIPQ uses a single-item scale to assess perceptions on a continuous linear scale. Five of the items assess illness representations; consequences (item 1), timeline (item 2), personal control (item 3), treatment control (item 4), and identity (item 5). Two of the items assess emotional representations; concern (item 6) and emotions (item 8). One item assesses illness coherence (item 7).

This study incorporated both cognitive and emotional representations of illness.

Assessment of the causal representation used an open-ended response item adapted from the IPQ-R which asked patients to list the 3 most important causal factors in their illness (item 9). Responses to the causal item were grouped into categories such as stress, lifestyle, heredity, etc. determined by the particular illness studied. Grouping responses in this way allows for categorical analysis. The method of analyzing the causal dimension in the BIPQ is likely to depend on the aims of the study. In some cases it may be best to analyze only the first-ranked cause and in other cases it may be better to
include all three of the causes generated by patients. For this study, the first cause was
categorized into six categories; namely, unknown (1), lifestyle (2), stress (3), hereditary
(4), environment (5), and other causes such as aging, karma, and lack of information (6).

Scoring ranges from 0 to 80. After reversing the score of positive items to
negative ones, the higher the total score shows a negative illness representation. The
BIPQ has good test-retest reliability, and there are moderate to good associations between
the BIPQ and the IPQ-R on all the equivalent dimensions (Broadbent, Petrie, Main, &
Weinman, 2006).

**Nursing Unit Characteristics**

Nursing characteristics were nursing staff demographics, nurse staffing, nursing
unit competency and group cohesion. Nursing staff demographics consisted of nursing
education and nursing experience. Nurse education referred to the highest levels of
nursing education. It was categorized into four levels including: less than nursing
diploma (1); diploma in nursing (Technical nurses: TNs) (2); certificate nursing or
bachelor of nursing (3); master of nursing or higher (4). In this study, nurse experience
was defined as years of working as a nurse providing direct care to patients in medical
acute care unit. Both nursing education and nursing experience were measured from the
individual nurse, then were complied to form the nursing unit variable. Percentage of
nurses who had at least the bachelor degree of nursing for each unit was the
representation of unit nurse education.

According to Benner (1984, 2001), competence of professional nursing is one
stage of skill acquisition from novice through competence. A nurse performing the job in
the same or similar situations for two or three years is considered a competent nurse. Competence is acquired through formal knowledge and clinical experience. Nurses in this stage have a feeling of mastery and the ability to cope with the many contingencies of clinical nursing. Therefore, in this study, the calculation of nurse experience for each unit was the percentage of nurses who had worked as nurses providing direct care to patients in a medical acute care unit at least 3 years.

*Nurse staffing.*

Nurse staffing referred to the delegation of number of nurses caring for patients in each unit. Nurse staffing was measured through the ratio of registered nurses to patient and skill mix. These data were obtained from the nursing administrative record of each unit.

The ratio of registered nurses to patients was the average number of patients per shift to the average number of RNs providing direct nursing care in a shift. The average number of patients per shift was calculated by summing the number of patients at the end of each shift during the data collection period (30 days, 90 shifts) and dividing the sum of the patients by 90. The average number of RNs was calculated by summing the number of RNs in each shift during the data collection period (30 days, 90 shifts) and dividing the sum of the RNs by 90. Then, the ratio of registered nurses to patients was calculated by dividing the average number of patients by the average number of RNs.

The skill mix referred to the proportion or percentage of RNs providing direct care compared to the total number of nursing staff providing direct care for each unit.
during the data collection period. The proportion of RNs was calculated by dividing the number of RNs in each unit by the total number of nursing staff in that unit.

Nursing unit competency.

Nursing competency in this study referred to the perceptions of nursing staff of their ability to perform their roles with their skills and knowledge. Abilities were evolved in the context of the scope and domains of practice in nursing and in response to client health needs. Consistent with standards of nursing practice, nurses need to accomplish patient education, provide of direct care using clinical skills, monitoring and ensuring quality of health care, interpersonal communication, and leadership abilities. Competency in this study related to the abilities of the workgroup and not the individual nurse.

Nursing unit competency was measured by the Nursing Unit Competency Scale developed by the investigator. The items were derived from a review of the literature on nursing competency. The frameworks used to guide the construction of this scale included the Six-Dimension Scale: Performance Appraisal Questionnaire (Schwirian, 1978), Benner’s domains of nursing practice (Benner, 1984), the Registered Nurse Competency developed by Marshall (1999) derived from the questionnaire used by the American Nurses’ Association in 1996 to identify the skill sets that nurses need in order to remain in acute care, and the draft of nursing competence of the Thailand Nursing Council (2003).

The development of this instrument was based on the model of determination and quantification of content validity established by Lynn (1986). This model includes 2 stages of development, the stage of development and judgment-quantification stage. The
development stage is the processes of identification of dimensions, generation of items for all dimensions, and assimilation of items into useable form.

The judgment-quantification stage is a judgment/quantification of content validity of each item in the instrument. The first draft of the Nursing Unit Competency Scale consisting of 34 items, with questions examining the content relevance of the items was sent to five experts. They were 3 nurse faculty members and 2 nurses who are interested in the area of professional nursing development. Simultaneously, to assure that the instrument was valid within the Thai context, the Thai version was sent to five experts in Thailand. These experts included 3 nurse faculty members and 2 head nurses who hold at least a master degree in nursing and are familiar with the appraisal of nursing competency. The head nurses work in acute care units. The experts were asked to rate the levels of relevancy of each item chosen to measure the competency of staff nurses. The experts were also asked to identify which domain each item belongs to. The scale of relevancy consisted of a 4-option rating scale; 1 (not relevant), 2 (unable to access relevance without item revision or item in need of revision so that it would no longer be relevant), 3 (relevant but needs minor alteration), and 4 (very relevant) (Lynn, 1986).

The quantification of content validity is the index of content validity (CVI). The actual CVI is the proportion of items that receive a rating of 3 or 4 by the experts (Waltz & Bausell, 1981). The CVI for each item determined by the proportion of experts who rate it as 3 or 4; while the CVI for the entire instrument determined by the proportion of total items judged content valid. In addition, experts were also asked to identify any areas that have been omitted from the instrument.
The findings from expert content validation showed that the CVI of the relevancy of each item ranged from .25 to 1.0. The CVI of the scale was .97. Item 22 with the CVI of .25 was not clear to the readers: “We perform our activities in corresponding to our unit’s mission and strategies.” Therefore, this item needed to be changed to “We have skill to perform nursing activities”. Two items with the CVI of .80 were in needed of minor revision. For example, the term “patient care technologies” was changed to “equipments for patient care”. The term “appropriate time for patient education” was changed to “when patients are ready to learn”.

The group of experts in Thailand also agreed that item 22 was not clear to the readers. The CVI of this item was .40. The CVI of each item ranged from .40 to 1.0. The CVI of the scale was .86. They agreed that 2 items shared the same content of individualized patients. One of these items needed to be deleted. Therefore, these two items were integrated. Similarly, other 2 items shared the content of working multidisciplinarily. These items were integrated. In conclusion for the purpose of enhancing content validity, two items were deleted from this scale. There were a total of 32 items for the Nursing Unit Competency Scale.

The Nursing Unit Competency Scale included five domains. They were patient education, direct care and clinical skills, monitoring and ensuring quality of care, interpersonal communication, and leadership. The Nursing Unit Competency Scale was a Likert type scale with 5 levels of ability regarding how well you and your nursing staff perform: 1 (very poor), 2 (poor), 3 (indifferent), 4 (well), and 5 (very well). The score
ranges from 32-160. Data measured from individual nurses were aggregated to the unit level.

Standardized Cronbach’s alpha coefficient of the Nursing Unit Competency Scale in the current study was .96 (N = 90). This scale showed an acceptable internal consistency.

*Group cohesion.*

Group cohesion is a result of all forces influencing members to stay in a group (Verran, 1995). Group cohesion in this study referred to the perception of nurses working in an acute medical care unit about all forces influencing them to stay in a group. Group Cohesion was measured by the Group Cohesion Scale (GCS) developed by Good and Nelson (1973). This scale measures perceptions of work group productivity, efficiency, feelings of belonging, morale, linking, and desire to work with the group. The GCS is a unidimensional, 6 item instrument with a 7-point Likert-type response scale. The score ranges from 7-42. Higher scores, by item, reflect higher levels of group cohesion. Cronbach alpha reliability scores range from .82-.89 (Hinds et al., 1998; Hinshaw, Smeltzer, & Atwood, 1987). This instrument was translated into Thai language by the investigator. The procedure for instrument translation is described in detail in the section of instrument translation. For this study, Cronbach alpha coefficient was .83 (N = 90). Data measured from the individual nurse was aggregated to the unit level.
Dependent Variables

Confidence in Self-Care Abilities

Confidence in self-care abilities refers to the belief of hospitalized patients in one’s capability to perform simple and complex self-care behaviors at home. Simple self-care behaviors are activities related to daily living; while complex self-care behaviors are necessary activities performed by an individual in order to manage disease, illness, and symptoms; such as, exercise or controlling diet. Confidence in self-care abilities is measured by the Self-Care: Condition Management Patient Questionnaire developed by Verran (2001). This questionnaire is based on Lorig and colleagues’ Self-Efficacy to perform Self-Management Behaviors (Lorig et al., 1996). The Self-Care: Condition Management Patient Questionnaire is a 10 item instrument with a 10-point Likert-type response scale. The score ranges from 10-100. Higher scores reflect higher levels of patient’s confidence in self-care abilities. Factor analysis showed that there are two domains of self-care behaviors including simple and complex self-care. Cronbach alpha reliability scores for simple self-care abilities range from .80-.84; and for complex self-care abilities range from .74-.78 (Verran, 2001). This instrument was translated into Thai language by the investigator. The procedure for instrument translation is described in detail in the section of instrument translation. For the current study, standardized Chronbach alpha coefficient was .74 (N = 129). However, it was found that the last item concerning the confidence of patients to adapt treatment without contacting health care providers had a very low mean score compared to the other items. The mean score of this item was 1.71 (SD = 1.83, possible score 1-10), while the mean scores of the other items
were from 6.34 (2.99) to 9.56 ($SD = 1.19$). In addition, the item to total scale correlation was very small ($r = .137$). Therefore, this item might not reflect confidence in self-care among Thai patients with chronic illness.

**Perception of Being Well-Cared For**

Perception of being well-cared for refers to patient’s opinion of individual and general care received from nursing staff during the hospital stay. The perception of being well-cared was measured by the Perception of Being Well-Cared For Scale developed by Verran (2001). This scale is a 20-item scale, which was adapted from The Client Satisfaction Scale (Larsen et al., 1979) and the Survey for Health Status and Health Needs (Ferketich, Phillips, & Verran, 1993). This scale shows acceptable psychometric properties. The factor analysis showed that there are three domains of this scale namely general care, caring behaviors, and individual care (Verran, 2001). Six items were deleted from this original scale because of poor item reliability scores. According to acceptable reliability, 15 items were recommended. Cronbach alpha reliability scores of each domain in this scale; namely general care, caring behaviors, and individual were .90, .83, and .76, respectively (Verran, 2001). However, this study added one item related to nurses’ competency and knowledge. This scale is comprised of 16 items. It was a 4-point Likert-type response scale. The possible scores ranged from 16 to 64. The advantage of this instrument is that it differentiates nurses from non-nurses, which make it possible for patients to make decision on their perception of nursing care. This instrument was translated into Thai language by the investigator. The procedure for instrument
translation is described in detail in the section of instrument translation. For the current study, standardized Chronbach alpha reliability was .94.

Instrument Translation

All instruments used in this study, except for the Nursing Unit Competency Scale, are developed in English. To ensure the appropriate use of these measures in another country, a translation technique is required. Jones (1986) proposed that the most common and highly recommended procedure for translating an instrument from the source language to the target language is back translation developed by Brislin in 1970.

There are three instruments that needed to be back translated into Thai. They were (a) the Group Cohesion Scale, (b) the Self-Care: Condition Management Patient Questionnaire, and (c) the Perception of Being Well-Cared For Scale. These scales were translated into Thai language using a modified back-translation method based on Brislin’s back translation technique (Brislin, 1970, 1986). First, the investigator translated these three questionnaires into Thai. Next, the Thai versions were translated back to English by three individuals bilingual in Thai and English who were blind to the original English version. Then, the original and the back-translated version were compared. If there were inconsistencies between these two English versions, the investigator and the bilingual experts discussed the differences until consensus of meaning was obtained. Finally, to assure the scales were valid and relevant within the Thai context, the Thai version of the two translated questionnaires for patients were evaluated for psychometric properties through a content validation procedure by 7 chronically ill Thai patients who were discharged from medical care units to home. Similarly, the Thai version of the
Group Cohesion scale was distributed to 7 nurses who were working in acute medical care units. Data from these patients and nurses were obtained from different units of this study. These content experts were asked to indicate whether the items were easy to understand or important for chronically ill patients in terms of self-care and perception of being well-cared for. The group cohesion items were evaluated by the nurses for understandability, and importance regarding group cohesion. The CVI was also used to demonstrate content validity of these translated instruments.

*Psychometric Properties of Translated Instruments*

Content validation of these translated instruments was demonstrated by the CVI. For the Group Cohesion Scale, all 7 nurses who were working in acute medical care units agreed that the items in this scale were easy to understand and relevant. The CVI of the understandable items was .93 and the relevancy was 1.0 (Table 3.). However, the experts suggested minor revisions of some items. For example, the term “team” in each item was changed to “unit”. The term “productive competency” was changed to “the ability to produce success of unit”. For the two scales for patients, most of the seven chronically ill patients understood what they were asked. The CVI of the understandable items of the Self-Care: Condition Management Patient Questionnaire was .96 and of the Perception of Being Well-Cared For Scale was 1.0. In addition, all patients rated the relevancy of each item of both scales as 3 and 4. Then, the CVIs of the relevancy of the Self-Care: Condition Management Patient Questionnaire and the Perception of Being Well-Cared For Scale were 1.0 (Table 3).
Determining translation adequacy, internal consistency coefficients were compared between the published reliability coefficients and the translated version of the original version used in this study. Nunnally and Bernstein (1994) proposed that translated instrument can be treated like new instrument. Therefore, an alpha coefficient value of .70 or greater is considered adequate. According to this study, all translated instruments showed acceptable internal consistency (Table 4).

Table 3.
CVI of Translated Instruments

<table>
<thead>
<tr>
<th>Translated instrument</th>
<th>Item easily to understand</th>
<th>Relevancy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Cohesion Scale</td>
<td>.93</td>
<td>1.0</td>
</tr>
<tr>
<td>Self-Care: Condition Management Patient Questionnaire</td>
<td>.96</td>
<td>1.0</td>
</tr>
<tr>
<td>Perception of Being Well-Cared For Scale</td>
<td>1.0</td>
<td>1.0</td>
</tr>
</tbody>
</table>

Table 4.
Comparing Cronbach Alpha Coefficients between the Original and Translated Versions

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Original version</th>
<th>Translated version</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Cohesion Scale</td>
<td>.82-.89</td>
<td>.83</td>
</tr>
<tr>
<td>Self-Care: Condition Management Patient Questionnaire</td>
<td>.79</td>
<td>.74</td>
</tr>
<tr>
<td>Perception of Being Well-Cared For Scale</td>
<td>.83</td>
<td>.94</td>
</tr>
</tbody>
</table>
Data Collection Procedures

The investigator contacted the director of four selected hospitals to inform them of the upcoming study, and asked for permission to access the chronically ill patients and nurses in medical care units. A schedule of data collection was designed. The investigator collected data in two medical care units at each hospital for a month, taking 4 months (February to May 2006) to complete data collection.

The investigator collected data from individual patients by contacting charge nurses on each unit for the list of patients who were to be discharged that day. Data from patients were collected for a month for each unit. The number of patients to be obtained from each unit made use of a stratified sampling procedure described earlier under sample. The stratified sampling procedure was by unit. Then, the investigator contacted each patient and collected data including the patient demographics, illness representation, patient’s confidence in self-care, and patient’s perception of being well-cared for, respectively. In addition, the investigator evaluated patients’ severity of illness using the Modified Rankin Scale.

Data from individual nurses and nursing administrators occurred during the same time period that the patient data were obtained. These data were obtained through the head nurse of each unit. The investigator contacted each head nurse to distribute the Nurse Demographic Questionnaire, the Nursing Unit Competency Scale, and the Group Cohesion Scale for each staff nurse. Nursing administrative data for each unit provided data on Nurse Staffing Form (Table 2).
Data Management

Data management is important for nursing systems research because several variables are related to the nursing work group. Data are frequently collected from individuals. However, investigators need to manifest them at a higher-level unit. The usual method of handling these differences is to aggregate individual responses to a value more representative of the group (Verran, Mark, & Lamb, 1992).

Data aggregation is based on a bottom-up process. There are two models of bottom-up processes (Kozlowski & Klein, 2000). They are the composition and compilation models. The composition model describes phenomena that are essentially the same as they emerge upward across levels. The compilation model describes phenomena that comprise common domains but are different as they emerge across levels (Kozlowski & Klein, 2000).

For this study, data of nurse education and nurse experience from individual nurses were compiled to represent nurse education and nurse experience of each nursing unit. Group cohesion, and nursing unit competency measured from individual nurses were aggregated to perform at the unit level. To ensure that these individual-level measurements can appropriately perform the same at the unit-level analysis, it is important to identify that these aggregated data support the composition model.

Representativeness is the important criterion established for supporting composition models. The utilization of the mean as a measure of a group demands that it be a summary of the majority of the members of the group. Verran, Gerber, and Milton
(1995) stated that a response rate of at least 50% would be adequate for group representation.

Verran and colleagues also (1995) stated that the first step in developing the composition model is the theoretical specification of relationships of these variables at the individual and unit levels. Nurses working in the same unit are exposed to common features, events, and processes. They interact and share interpretation over time, which may converge with shared consensual views of the group. In addition, some processes in the group, such as attraction, selection, attrition, socialization, and leadership operate to reduce the variation of individual differences and perceptions (Kozlowski & Klein, 2000). Therefore, nurses’ perception of group cohesion and nursing unit competency may be influenced by the working group. Moreover, aggregated psychometric properties (i.e., aggregated reliability and validity) are also used to support the composition model (Verran et al., 1992). When the psychometric properties of these variables were within acceptable limits, the mean values of these two variables were used as a score of each unit.

Aggregated reliability of these two variables needs to be evaluated to ensure that they meet the criteria for use as group level data. Mean rater reliability or the intraclass correlation coefficient (ICC) from a one-way analysis of variance is commonly calculated to support the aggregated reliability. Shrout and Fleiss (1979) suggested a formula for the ICC as follow:

\[
ICC = \frac{(BMS-WMS)}{BMS}.
\]
The BMS is the mean squares between the groups; the WMS is the mean squares within the groups. The ICC value of .60 or more indicates the consistency of aggregated mean score reliability (Glick, 1985).

Interitem correlation can be used to test the reliability of aggregate data (Glick, 1985; Verran, et al., 1995). Glick (1985) suggested using a cut point of at least .60 to justify any use of the aggregated measure. Accordingly, a small sample size of aggregated data might attenuate the correlations. Verran and colleagues (1995) recommended using a cutoff of anywhere from .40 to .60, with at least 60% of the interitem correlations within a scale.

In addition, the degree to which individual data are interchangeable at the group level indicates the within group agreement. This agreement reflects the degree to which individuals provide essentially the same rating (Kozlowski & Hattrup, 1992). The most frequently used measure of within-group agreement in the organizational literature is the \( r_{wg} \) (James, Demaree, & Wolf, 1993). The \( r_{wg} \) is calculated by comparing an observed group variance to an expected random variance. The possible value of \( r_{wg} \) ranges from 0 to 1, which 1 means perfect agreement.

After it was confirmed that these two variables could perform as group level data, mean scores of each variable were assigned to individual patients within each unit. Therefore, individual patients who were admitted to the same unit were represented by the same nursing unit characteristics.
Data Analysis

Data analysis procedures involved univariate analysis, bivariate relationship analysis, and multiple regression analysis. All analysis performed using SPSS version 14 for Windows. Statistical significance was set at an alpha of .05. To answer research questions the following analyses were performed.

1. Univariate analysis was used to clean and check the quality of data. It examined the variability of data, described the characteristics of each variable, and checked statistics assumptions prior to analyses (e.g., measures of central tendency, variability, and skewness).

2. Bivariate relationship analysis was used to examine the relationships between each independent variable and both dependent variables. The description of the relationships between these variables was established using the Pearson Product Moment correlation coefficient. These analyses respond to the first research question.

3. Multiple regression analyses were used to test a mediator effect. Mediator effects should only be tested if there is a significant direct association between an independent variable and an outcome variable. Simultaneously, a mediator should have significant relationships with the independent variable and the outcome. There were two independent variables showing significant relationships with each dependent variable. Since, there was only a significant relationship between two independent variables (i.e., severity of illness and illness representation) that had a relationship with patient’s confidence in self-care. In addition, it is recognized
that somatic experiences or symptoms are a focus for the formation of illness representations (Leventhal, & Diefenbach, 1992). Therefore, severity of illness may influence illness representation, which in turn might affect patient’s confidence in self-care. The role of illness representation as a mediator in the relationship between severity of illness and patient’s confidence in self-care was examined using Baron and Kenny’s (1986) procedure for testing the mediation. Three regression equations were used to test the role of illness representation on the relationship between severity of illness and patient’s confidence in self-care. The three equations were: (a) regressing illness representation on severity of illness, (b) regressing patient’s confidence in self-care on severity of illness, and (c) regressing patient’s confidence in self-care on both severity of illness and illness representation. If the mediator effect occurs, the three equations must be statistically significant. In addition, in the third equation, illness representation must affect patient’s confidence in self-care and the effect of severity of illness on patient’s confidence in self-care must be decreased (Baron & Kenny, 1986). These analyses respond to the second research question.

4. Two hierarchical multiple regression analyses were used to determine whether there were individual and contextual effects on patient outcomes, which provides an answer to the third, fourth, and fifth research questions. In the hierarchical multiple regression analysis, the set of patient characteristics and the set of nursing unit characteristics will be entered into the analysis.
4.1 The first hierarchical multiple regression analysis was performed to answer the third research question. The set of nursing unit characteristics was entered in the first block, then the set of patient characteristics was entered in the second block.

4.2 The second hierarchical multiple regression analysis was performed to answer the fourth research question. The set of patient characteristics was entered in the first block, then the set of nursing unit characteristics was entered in the second block.

4.3 The fifth research question was answered from the previous hierarchical multiple regression analyses. Mark, Salyer, and Wan (2000) noted that a contextual effect exists when the explained variance of a model containing both a higher and lower hierarchical level was significantly greater than a model containing only the lower-level or only the higher-level variables.

5. The stepwise multiple regressions were used to examine which variables were the best predictor of patient outcomes, while all independent variables were taken into accounted in the analyses. The analyses were conducted to answer the sixth research question.

Human Subject Protection

Before collecting data, the research proposal was reviewed and approved by the University of Arizona’s Human Subject Committee (see Appendix B). The purpose of this study was explained to each subject with the invitation to participate. Participants could decline to be included in this study or not without affecting their medical care. A
disclaimer form was used (see Appendix C). The study protected for subjects’ anonymity and confidentiality. All subjects were assured that no individual names were collected and therefore all responses were kept confidential. All patient documents were coded with a number. Only the investigator could access the coded numbers assigned to all questionnaires for both nurses and patients.

Summary

This study used a cross-sectional correlational design to identify the effects of patient and nursing unit characteristics on nursing-sensitive patient outcomes. Data were obtained from hospitalized patients, nurses, and nursing administrative from 8 acute medical care units in four hospitals in Thailand, including three general hospitals under the Ministry of Public Health of Thailand and a university hospital. Data from individual patients were analyzed at the individual level. However, data from individual nurses were aggregated to represent nursing unit characteristics. Twelve independent variables were used in the multiple regression analysis to explain variance in 2 nursing-sensitive patient outcomes. Therefore, the estimated sample size of patients was 129. Descriptive statistics were used to examine the quality of the data and the assumptions of statistical analysis. The regression analysis, hierarchical multiple regression analysis and stepwise multiple regression were performed to answer all research questions.
CHAPTER 4: DATA ANALYSIS AND RESULTS

This chapter describes the analyses of data and the results of findings to each research question. The first part is the preparation of aggregated data. The second part presents the descriptions of setting and sample. Finally, the third part reports the results of statistical analyses related to each research question.

Preparation of Aggregated Data

Data Aggregation

The primary unit of analysis for this study was the individual level. The purpose of this study was to investigate the effect of patient and nursing unit characteristics on patient’s confidence in self-care and patient’s perception of being well-cared for. Data collected from individual nurses were aggregated to the unit level to represent the nursing unit characteristics.

Compilation and composition models were used for data aggregation. Nurse education and nurse experience were aggregated through the compilation model, while nursing unit competency and group cohesion were aggregated through the composition model.

To ensure that the mean values of the composition model variables provided acceptable scores for each unit, the intraclass correlation coefficient (ICC), aggregated interitem correlation, and $r_{wg}$ were considered. The ICC of aggregated nursing unit competency score was .46, less than acceptable criterion (.60) (Glick, 1985), while the ICC of aggregated group cohesion was .81. For this sample, there was limited between group variance. The low ICC resulted from the between group variance was only slightly
higher than within group variance. However, the percentage of acceptable aggregated interitem correlation coefficient (> .40) of the nursing unit competency was 66.94%, and of the group cohesion was 95.24, which were within acceptable limits (Verran et al., 1995) (Table 5). The interitem correlation correlation coefficients reflect internal consistency of aggregated data. The $r_{wg}$s of each unit of these two variables were greater than 0.90. The $r_{wg}$ showed high agreement of individuals in each unit. The $r_{wg}$ by each unit for these two variables were reported in Table 6. These results indicate that the nursing unit competency scores follow a partial composition model (Bliese, 2000).

Table 5.

<table>
<thead>
<tr>
<th>Variables</th>
<th>ICC (&gt;.60)</th>
<th>% of aggregated interitem correlation &gt;.40 (60%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nursing unit competency</td>
<td>.46</td>
<td>66.94</td>
</tr>
<tr>
<td>Group cohesion</td>
<td>.81</td>
<td>95.24</td>
</tr>
</tbody>
</table>
Table 6.

*R*<sub>wg</sub> *by Each Unit for Nursing Unit Competency and Group Cohesion*

<table>
<thead>
<tr>
<th>Unit</th>
<th>Nursing unit competency</th>
<th>Group cohesion</th>
</tr>
</thead>
<tbody>
<tr>
<td>1&lt;sup&gt;st&lt;/sup&gt;</td>
<td>0.999803</td>
<td>0.901147</td>
</tr>
<tr>
<td>2&lt;sup&gt;nd&lt;/sup&gt;</td>
<td>0.999837</td>
<td>0.926457</td>
</tr>
<tr>
<td>3&lt;sup&gt;rd&lt;/sup&gt;</td>
<td>0.999805</td>
<td>0.900292</td>
</tr>
<tr>
<td>4&lt;sup&gt;th&lt;/sup&gt;</td>
<td>0.99981</td>
<td>0.956138</td>
</tr>
<tr>
<td>5&lt;sup&gt;th&lt;/sup&gt;</td>
<td>0.999894</td>
<td>0.951805</td>
</tr>
<tr>
<td>6&lt;sup&gt;th&lt;/sup&gt;</td>
<td>0.999878</td>
<td>0.943658</td>
</tr>
<tr>
<td>7&lt;sup&gt;th&lt;/sup&gt;</td>
<td>0.999846</td>
<td>0.923406</td>
</tr>
<tr>
<td>8&lt;sup&gt;th&lt;/sup&gt;</td>
<td>0.999901</td>
<td>0.92243</td>
</tr>
</tbody>
</table>

Descriptions of Study Setting and Sample

*Setting*

The characteristics of the settings are reported in Table 7. Data were collected in medical care units of the 4 hospitals in Thailand. One hospital is located in Bangkok. The other three hospitals are located in the suburbs of Bangkok. The size of these hospitals ranges from 550-800 beds. Two medical care units, a male only and a female only unit, from each hospital are included in this study. The size of these units ranged from 25-40 beds. The total number of direct-care staff nurses for each unit ranged from 17 to 30.
Table 7.

*Descriptions of Nursing Unit Characteristics*

<table>
<thead>
<tr>
<th>Nursing Unit Characteristics</th>
<th>1\textsuperscript{st}</th>
<th>2\textsuperscript{nd}</th>
<th>3\textsuperscript{rd}</th>
<th>4\textsuperscript{th}</th>
<th>5\textsuperscript{th}</th>
<th>6\textsuperscript{th}</th>
<th>7\textsuperscript{th}</th>
<th>8\textsuperscript{th}</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of hospital</td>
<td>G</td>
<td>G</td>
<td>G</td>
<td>G</td>
<td>U</td>
<td>U</td>
<td>G</td>
<td>G</td>
</tr>
<tr>
<td>Number of beds per unit</td>
<td>39</td>
<td>39</td>
<td>40</td>
<td>40</td>
<td>30</td>
<td>25</td>
<td>35</td>
<td>35</td>
</tr>
<tr>
<td>Gender of patients</td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>Direct-care staff</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Registered nurse</td>
<td>18</td>
<td>16</td>
<td>8</td>
<td>10</td>
<td>11</td>
<td>8</td>
<td>19</td>
<td>15</td>
</tr>
<tr>
<td>Technical nurse</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Practical nurse</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>10</td>
<td>9</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Nurse aide</td>
<td>10</td>
<td>14</td>
<td>7</td>
<td>6</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>28</td>
<td>30</td>
<td>18</td>
<td>17</td>
<td>21</td>
<td>17</td>
<td>23</td>
<td>20</td>
</tr>
</tbody>
</table>

*Note.* G = General hospital; U = University hospital.

*Sample*

The sample consisted of 130 patients and 90 staff nurses from these 8 medical care units. The demographics and characteristics of patients and nursing staff characteristics are shown in Tables 8 and 9.
Table 8.

**Descriptions of Patient Demographics and Characteristics**

<table>
<thead>
<tr>
<th>Patient Characteristics</th>
<th>N (130)</th>
<th>%</th>
<th>M</th>
<th>SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (year)</td>
<td>130</td>
<td>100</td>
<td>62.35</td>
<td>10.57</td>
<td>33-86</td>
</tr>
<tr>
<td>Less than 50</td>
<td>20</td>
<td>15.4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>51-60</td>
<td>38</td>
<td>29.2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>61-70</td>
<td>40</td>
<td>30.8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>More than 71</td>
<td>32</td>
<td>24.6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>65</td>
<td>50</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>65</td>
<td>50</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No formal education</td>
<td>9</td>
<td>6.9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary school</td>
<td>86</td>
<td>66.2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secondary school</td>
<td>9</td>
<td>6.9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High school and vocational</td>
<td>18</td>
<td>13.8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bachelor</td>
<td>8</td>
<td>6.2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diagnosis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hypertension</td>
<td>8</td>
<td>6.2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>23</td>
<td>17.7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chronic obstructive</td>
<td>21</td>
<td>16.2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pulmonary disease</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Congestive heart failure</td>
<td>21</td>
<td>16.2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute myocardial infarction</td>
<td>51</td>
<td>39.2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cerebrovascular accident</td>
<td>6</td>
<td>4.6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Duration of illness</td>
<td>130</td>
<td>100</td>
<td>5.07</td>
<td>7.96</td>
<td>.01-30.00</td>
</tr>
<tr>
<td>Less than 1 year</td>
<td>70</td>
<td>53.8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-5 years</td>
<td>25</td>
<td>19.2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6-9 years</td>
<td>8</td>
<td>6.2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>More than 10 years</td>
<td>27</td>
<td>20.8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Severity of illness</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>6</td>
<td>4.6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>66</td>
<td>50.8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>40</td>
<td>30.7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>17</td>
<td>13.1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>.8</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Patient Demographics and Characteristics

The descriptions of patient demographics and characteristics are reported in Table 8. The largest percentage of patients was older than 60 years (55.4%). The sample was equivalent with respect to gender. The largest percentage of the patients had a primary school education (66.2%). The majority of the diagnosis was acute myocardial infarction (39.2%), followed by diabetes mellitus (17.7%). Greater than one-half (53.8%) of patients had the diagnosis for which they were admitted less than one year. The majority of patients indicated a severity of illness according to Modified Rankin Scale, at level 1 (50.8%), followed by level 2 (30.7%), level 3 (13.1%), level 0 (4.6%), and level 4 (0.8%). Therefore, half of respondent patients were not disabled or were slightly disabled. When classified as slightly disabled, they were unable to carry out all activities, but they were able to look after their own affairs without assistance.
Table 9.

Descriptions of Nursing Staff Characteristics by Medical Care Unit

<table>
<thead>
<tr>
<th>Nursing Staff Characteristics</th>
<th>Total N (%) of sample</th>
<th>1st Unit</th>
<th>2nd Unit</th>
<th>3rd Unit</th>
<th>4th Unit</th>
<th>5th Unit</th>
<th>6th Unit</th>
<th>7th Unit</th>
<th>8th Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number and % of RN from each unit</td>
<td>90 (100)</td>
<td>14 (15.6)</td>
<td>12 (13.3)</td>
<td>8 (8.9)</td>
<td>10 (11.1)</td>
<td>11 (12.2)</td>
<td>8 (8.9)</td>
<td>13 (14.4)</td>
<td>14 (15.6)</td>
</tr>
<tr>
<td>% of RN response rate per unit</td>
<td></td>
<td>77.78</td>
<td>75</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>68.42</td>
<td>93.33</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20-30 years</td>
<td>64 (71.1)</td>
<td>9</td>
<td>7</td>
<td>6</td>
<td>4</td>
<td>11</td>
<td>7</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>31-40 years</td>
<td>19 (21.1)</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>5</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>41-50 years</td>
<td>6 (6.7)</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>&gt;51 years</td>
<td>1 (1.1)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diploma</td>
<td>1 (1.1)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Bachelor’s</td>
<td>87 (96.7)</td>
<td>14</td>
<td>12</td>
<td>7</td>
<td>10</td>
<td>11</td>
<td>8</td>
<td>12</td>
<td>13</td>
</tr>
<tr>
<td>Master’s</td>
<td>2 (2.2)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Experience in medical care unit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 1 years</td>
<td>18 (20)</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>2-3 years</td>
<td>18 (20)</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>4-5 years</td>
<td>16 (17.8)</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>&gt; 6 years</td>
<td>38 (42.2)</td>
<td>9</td>
<td>6</td>
<td>4</td>
<td>6</td>
<td>2</td>
<td>1</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>
Nursing Staff Demographics and Characteristics

The nursing staff demographics and characteristics by medical care unit are presented in Table 9. Ninety direct-care nurses responded to the questionnaires. Nurses were an average of 29 years and 8 months old. The largest percentage (71.1%) of nurses was under 30 years of age. Most nurses (96.7%) had a bachelor’s degree in nursing, while a small percentage had earned a diploma (1.1%) or a master’s degree in nursing (2.2%). The average number of years of nurse experience in the respective medical care unit was 5 years and 9 months, with the range of 0.60-20.00 years. The majority of nurses (42.2%) had more than 6 years of experience in a medical care unit, and 40% of nurses had medical care experience less than 3 years.

Descriptions of Independent Variables and Dependent Variables

Descriptions of Independent Variables

Illness representation.

Mean, standard deviation, and range of illness representation scores are presented in Table 10. The mean of total illness representation was 36.39 (SD = 12.72, range 12-71). The higher the illness representation score, the more negative the patient’s perception about their illness. For the causes of illness generated by patients, about one-third of patients (N = 50, 38.5%) reported that they did not know what the cause of their illness actually was. Forty-three patients (33.1 %) reported that their lifestyle, such as eating behavior, lack of exercise, drinking, and smoking caused their illness. Fourteen patients (10.8%) reported that stress was the cause of their illness (see Table 11).
Table 10.

Descriptions of Patient’s Illness Representation Scores

<table>
<thead>
<tr>
<th>Illness representation</th>
<th>Possible range of scores</th>
<th>M</th>
<th>SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cognitive representation</td>
<td>5-50</td>
<td>23.10</td>
<td>8.21</td>
<td>7-45</td>
</tr>
<tr>
<td>Emotional representation</td>
<td>2-20</td>
<td>8.73</td>
<td>6.03</td>
<td>2-20</td>
</tr>
<tr>
<td>Illness coherence</td>
<td>1-10</td>
<td>4.56</td>
<td>2.48</td>
<td>1-10</td>
</tr>
<tr>
<td>Total illness representation</td>
<td>8-80</td>
<td>36.39</td>
<td>12.72</td>
<td>12-71</td>
</tr>
</tbody>
</table>

Table 11.

Descriptions of Causes of Illness Perceived by Patients

<table>
<thead>
<tr>
<th>Cause</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unknown</td>
<td>50</td>
<td>38.5</td>
</tr>
<tr>
<td>Lifestyle</td>
<td>43</td>
<td>33.1</td>
</tr>
<tr>
<td>Stress</td>
<td>14</td>
<td>10.8</td>
</tr>
<tr>
<td>Hereditary</td>
<td>5</td>
<td>3.8</td>
</tr>
<tr>
<td>Environment</td>
<td>3</td>
<td>2.3</td>
</tr>
<tr>
<td>Other</td>
<td>15</td>
<td>11.5</td>
</tr>
<tr>
<td>Total</td>
<td>130</td>
<td>100</td>
</tr>
</tbody>
</table>
Nurse staffing.

The ratio of RN to patients and the proportion of RNs to the total number of nursing staff (skill mix) by each unit are presented in Table 12. The average ratio of RN to patient was 1:8.07, with a range from 1:5.67 to 1:13.20. The average proportion of RNs to total number of direct care staff was .60, with a range from .44 to .83.

Table 12.

**Descriptions of RN to Patient Ratio and Skill Mix**

<table>
<thead>
<tr>
<th>Unit</th>
<th>RN to patient ratio</th>
<th>Skill mix</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>1:6.06</td>
<td>.64</td>
</tr>
<tr>
<td>2nd</td>
<td>1:6.80</td>
<td>.53</td>
</tr>
<tr>
<td>3rd</td>
<td>1:13.20</td>
<td>.44</td>
</tr>
<tr>
<td>4th</td>
<td>1:10.10</td>
<td>.63</td>
</tr>
<tr>
<td>5th</td>
<td>1:7.31</td>
<td>.50</td>
</tr>
<tr>
<td>6th</td>
<td>1:7.40</td>
<td>.47</td>
</tr>
<tr>
<td>7th</td>
<td>1:5.67</td>
<td>.83</td>
</tr>
<tr>
<td>8th</td>
<td>1:8.02</td>
<td>.75</td>
</tr>
<tr>
<td>Average</td>
<td>1:8.07</td>
<td>.60</td>
</tr>
</tbody>
</table>

Nursing unit competency.

Means, standard deviations, and ranges of nursing unit competency are reported in Table 13. The possible scores of nursing unit competency were 32-160. The mean of overall nursing unit competency was 116.784 ($SD = 14.06$), ranging from 86 to 151. For
the nursing unit competency scores by each unit, the highest mean score was 128.50 ($SD = 15.24$). The lowest mean score was 108.85 ($SD = 15.10$).

**Group cohesion.**

Means, standard deviations, and ranges of nursing unit competency are reported in Table 13. The possible scores of group cohesion were 1-42. The mean of group cohesion was 30.39 ($SD = 4.59$), ranging from 21 to 40. For the group cohesion scores by each unit, the highest mean score was 34.29 ($SD = 4.27$). The lowest mean score was 27.25 ($SD = 3.52$).

Table 13.

*Descriptions of Means, Standard Deviations, and Ranges of the Nursing Unit Competency Score and the Group Cohesion Score*

<table>
<thead>
<tr>
<th>Unit</th>
<th>Number of nurses</th>
<th>Nursing unit competency</th>
<th>Group cohesion</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>1&lt;sup&gt;st&lt;/sup&gt;</td>
<td>14</td>
<td>118.14</td>
<td>17.25</td>
</tr>
<tr>
<td>2&lt;sup&gt;nd&lt;/sup&gt;</td>
<td>12</td>
<td>114.92</td>
<td>13.67</td>
</tr>
<tr>
<td>3&lt;sup&gt;rd&lt;/sup&gt;</td>
<td>8</td>
<td>128.50</td>
<td>15.24</td>
</tr>
<tr>
<td>4&lt;sup&gt;th&lt;/sup&gt;</td>
<td>10</td>
<td>119.10</td>
<td>15.09</td>
</tr>
<tr>
<td>5&lt;sup&gt;th&lt;/sup&gt;</td>
<td>11</td>
<td>114.82</td>
<td>9.52</td>
</tr>
<tr>
<td>6&lt;sup&gt;th&lt;/sup&gt;</td>
<td>8</td>
<td>114.00</td>
<td>11.35</td>
</tr>
<tr>
<td>7&lt;sup&gt;th&lt;/sup&gt;</td>
<td>13</td>
<td>108.85</td>
<td>15.10</td>
</tr>
<tr>
<td>8&lt;sup&gt;th&lt;/sup&gt;</td>
<td>14</td>
<td>119.14</td>
<td>9.76</td>
</tr>
<tr>
<td>Average</td>
<td>90</td>
<td>116.78</td>
<td>14.06</td>
</tr>
</tbody>
</table>
Descriptions of Dependent Variables

Patient’s confidence in self-care abilities and patient’s perception of being well-cared for.

Means, standard deviations, and ranges of patient’s confidence in self-care abilities and patient’s perception of being well-cared for are presented in Table 14. The \( z \) – score of the skewness of patient’s confidence in self-care was -8.09, indicating a piling up of scores on the right of the distribution. The \( z \) – score of the skewness of patient’s perception of being well-cared for was 1.93, indicating a piling up of scores on the left of the distribution. According to Field (2002), as a rule of thumb, a value of \( z \) – score above 2 is considered significantly different from chance to be problematic. In addition, the box plot showed that case 22 and case 17 were the outliers of patient’s confidence in self-care and patient’s perception of being well-cared for, respectively. More detail of outliers is presented in the heading of outliers and residuals. After these outliers were deleted from each dependent variable, the \( z \) – scores of the skewness of patient’s confidence self-care and patient’s perception of being well-cared for were -2.19 and 1.90, respectively. The outlier of patient’s confidence in self-care was a 65 years old, male patient with congestive heart failure. He was unable to carry out all activities, but able to look after his own affairs without assistance. The outlier of patient’s perception of being well-cared for was a 57 years old, male patient with acute myocardial infarction. He was able to carry out all duties and activities. These 2 outliers had primary school education. Therefore, there were 129 patients in the following analyses. The higher the score refers to greater confidence in self-care abilities. The mean of patient’s confidence in self-care was 75.81
(\(SD = 10.14\)), ranging from 45 to 94. The mean of patient’s perception of being well-cared for was 51.75 (\(SD = 6.18\)), ranging from 38 to 64.

Table 14.

*Description of Patient’s Confidence in Self-Care Abilities and Patient’s Perception of Being Well-Cared For*

<table>
<thead>
<tr>
<th>Dependent variables</th>
<th>Possible range</th>
<th>(M)</th>
<th>(SD)</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Confidence in self-care abilities</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Simple self-care</td>
<td>6-60</td>
<td>47.96</td>
<td>7.59</td>
<td>21-60</td>
</tr>
<tr>
<td>Complex self-care</td>
<td>4-40</td>
<td>27.85</td>
<td>3.84</td>
<td>16-39</td>
</tr>
<tr>
<td>Total self-care</td>
<td>10-100</td>
<td>75.81</td>
<td>10.14</td>
<td>45-94</td>
</tr>
<tr>
<td>Perception of being well-cared for</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General</td>
<td>6-24</td>
<td>19.72</td>
<td>2.73</td>
<td>12-24</td>
</tr>
<tr>
<td>Caring</td>
<td>6-24</td>
<td>18.77</td>
<td>2.55</td>
<td>11-24</td>
</tr>
<tr>
<td>Individual</td>
<td>4-16</td>
<td>13.26</td>
<td>1.57</td>
<td>11-16</td>
</tr>
<tr>
<td>Total well-cared for</td>
<td>16-64</td>
<td>51.75</td>
<td>6.18</td>
<td>38-64</td>
</tr>
</tbody>
</table>
Testing the Assumptions of Multiple Regression

Multicollinearity

Prior to performing the regression analyses, the correlation of variables within blocks was examined. A strong correlation (> .80) between two or more predictors in a regression model indicates multicollinearity, which may cause a problem in multiple regression analysis. High levels of collinearity increase the probability that a good predictor of the outcome will be found nonsignificant and rejected from the model (Field, 2002). For this study, bivariate analyses showed that RNs to patient ratio and nursing unit competency had a strong correlation ($r = .834, p < .001$) (see Table 16). To clearly identify multicollinearity, other collinearity diagnostics i.e., variance inflation factor (VIF), and tolerance were computed, simultaneously with multiple regression analyses. The average VIF values greater than 1 and the tolerance values below 0.1 may bias the regression model (Field, 2002). For the analyses in this study, the average VIF value was 1.1072 and the average tolerance was 0.9092. Therefore, the results of multiple regression analyses may be affected by a strong correlation between RNs to patient ratio and nursing unit competency. Interpretation of the relative contribution of each variable will be discussed in relationship to the effect of multicollinearity.

Homoscedasticity

The accuracy of prediction in the regression model can be detected from residual analysis. Residuals in the regression model are the differences between the values of the outcome predicted by the model and the values of the outcome observed in the sample (Field, 2002). If the model fits the sample data, all residuals will be small. One assumption of regression analysis is that at each level of the predictor variables, the
variance of the residual should be constant or known as homoscedasticity. That is the variance around the regression line is the same for all values of the predictor variable. The normal probability plot of the residual in this study shows the homoscedasticity of the data. The plot shows that most dots dispersed around zero for the two dependent variables: patient’s confidence in self-care and patient’s perception of being well-cared for (see Figure 3 and Figure 4). Then, the assumption of homoscedasticity was met.

Figure 3.

*Plot of Standardized Residuals against Standardized Predicted Values of the Regression Model of Patient’s Confidence in Self-Care*
Figure 4.

*Plot of Standardized Residuals against Standardized Predicted Values of the Regression Model of Patient’s Perception of Being Well-Cared For*

**Outliers and Residuals**

An outlier is a case that differs from the main trend of the data. It was found from the normality plot of standardized residual that the score of case 22 in patient’s confidence in self-care and the score of case 17 in patient’s perception of being well-cared for were outliers. In an average, normally distributed sample, 95% should lie between -2 and +2, and 99% should lie between -2.5 and +2.5. Standardized residuals with an absolute greater than 3 are cause of concern (Field, 2002). The standardized
residual of case 22 and 17 were -5.464 and -2.52, respectively. Therefore, case 22 and 17 were deleted from the analysis related to each dependent variable.

Analyses of Research Questions

Question One

The first question was whether selected patient characteristics (i.e., age, gender, education, duration of illness, severity of illness, and illness representation) and nursing unit characteristics (i.e., nurse education, nurse experience, nurse staffing, nursing unit competency, and group cohesion) were related to the patient outcomes of patient’s confidence in self-care and patient’s perception of being well-cared for. The following specific questions were addressed.

Are there relationships between patient characteristics and patient’s confidence in self-care and patient’s perception of being well-cared for? A Pearson Moment Correlation analysis was conducted to examine the relationship among patient’s age, gender, education, duration of illness, severity of illness, illness representation, confidence in self-care, and perception of being well-cared for. The correlation matrix illustrated bivariate relationships among these major study variables (Table 15). There were small to moderate significant negative relationships between severity of illness and confidence in self-care ($r = -.378, p < .001$), severity of illness and perception of being well-cared for ($r = -.199, p < .05$), and illness representation and confidence in self-care ($r = -.298, p < .01$). The correlation matrix also showed small significant relationships among patient characteristic variables. Patient’s age significantly and inversely correlated with patient’s education ($r = -.217, p < .05$) and positively correlated with severity of
illness ($r = .207, p < .05$). Patient’s gender (male = 0, female = 1) significantly correlated with patient’s education (no formal education = 0, primary school = 1, secondary school = 2, high school and vocational college = 3, diploma = 4, bachelor = 5, and post bachelor = 6) ($r = -.364, p < .001$), duration of illness ($r = .243, p < .01$), and illness representation ($r = .177, p < .05$). Patient’s severity of illness positively correlated with illness representation ($r = .300, p < .01$). In addition, there was a small positive correlation between patient’s confidence in self-care and patient’s perception of being well-cared for ($r = .253, p < .05$).
Table 15.

**Descriptions of Correlation Matrix among Patient Characteristics and Dependent Variables**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Gender</th>
<th>Education</th>
<th>Duration of illness</th>
<th>Severity of illness</th>
<th>Illness representation</th>
<th>Confidence in self-care</th>
<th>Being well-cared for</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>.099</td>
<td>-.217*</td>
<td>.118</td>
<td>.207*</td>
<td>-.080</td>
<td>-.103</td>
<td>-.056</td>
</tr>
<tr>
<td>Gender</td>
<td>-</td>
<td>-.364**</td>
<td>.243**</td>
<td>-.010</td>
<td>.177*</td>
<td>.001</td>
<td>.134</td>
</tr>
<tr>
<td>Education</td>
<td>-</td>
<td>-.182*</td>
<td>-.009</td>
<td>-.050</td>
<td>.052</td>
<td>-.120</td>
<td></td>
</tr>
<tr>
<td>Duration of illness</td>
<td>-</td>
<td>.117</td>
<td>.216*</td>
<td>.016</td>
<td>-.041</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Severity of illness</td>
<td>-</td>
<td>.300**</td>
<td>-.378**</td>
<td>-.199*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Illness representation</td>
<td>-</td>
<td>-.298**</td>
<td>-.124</td>
<td>.253**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Confidence in self-care</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Being well-cared for</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*  Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).
Are there relationships between nursing unit characteristics and patient’s confidence in self-care and patient’s perception of being well-cared for? A Pearson Moment Correlation analysis was computed to examine the relationship among nurse education, nurse experience, nurse staffing, nursing unit competency, group cohesion, confidence in self-care, and perception of being well-cared for. There was little variability among nurse respondents with respect to education. Most nurse respondents had a bachelor’s degree (96.7%); 5 units had 100% of nurses with a bachelor’s degree (see Table 9). Nurse education was deleted from the following analysis because of the lack of variability. The correlation matrix illustrated bivariate relationships among these major study variables (Table 16). There was a small negative significant correlation between group cohesion and patient’s perception of being well-cared for ($r = -.195$, $p < .05$). There were negative significant correlations between RNs to patient ratio and skill mix ($r = -.466$, $p < .001$), a highly positive significant correlation between RNs to patient ratio and nursing unit competency ($r = .834$, $p < .001$), and a small significant correlation between RNs to patient ratio group cohesion ($r = .225$, $p < .05$). Skill mix and nursing unit competency and group cohesion were significantly correlated ($r = -.472$, $p < .001$; $r = .210$, $p < .05$ respectively). In addition, group cohesion and nursing unit competency showed a positively significant correlation ($r = .563$, $p < .001$).
Table 16.

*Description of Correlation Matrix among Nursing Unit Characteristics and Dependent Variables*

<table>
<thead>
<tr>
<th>Variables</th>
<th>RNs to patient ratio</th>
<th>Skill mix</th>
<th>Unit competency</th>
<th>Group cohesion</th>
<th>Confidence in self-care</th>
<th>Being well-cared for</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurse experience</td>
<td>.068</td>
<td>.600**</td>
<td>-.019</td>
<td>.039</td>
<td>.071</td>
<td>-.035</td>
</tr>
<tr>
<td>RNs to patient ratio</td>
<td>-</td>
<td>-</td>
<td>.834**</td>
<td>.225*</td>
<td>-.096</td>
<td>-.104</td>
</tr>
<tr>
<td>Skill mix</td>
<td>-</td>
<td>-.472**</td>
<td>.210*</td>
<td>.087</td>
<td>-.083</td>
<td></td>
</tr>
<tr>
<td>Nursing unit</td>
<td>-</td>
<td>-</td>
<td>.563**</td>
<td>-.065</td>
<td>-.097</td>
<td></td>
</tr>
<tr>
<td>Group cohesion</td>
<td>-</td>
<td>-</td>
<td>-.001</td>
<td>-.195*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Confidence in self-care</td>
<td>-</td>
<td>-</td>
<td>.253**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Being well-cared for</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).
Question Two

How do patient characteristics and nursing unit characteristics relate to patient’s confidence in self-care and patient’s perception of being well-cared for?

According to the correlation matrix the more severe the illness, the lower the confidence in self-care and the more negative the illness representation, the lower the confidence in self-care. In addition, severity of illness was significantly correlated with illness representation. The correlations also show that the more severe the illness, the lower perception of being well-cared for and the higher the group cohesion, the lower perception of being well-cared for, severity of illness and group cohesion were not significantly associated. Therefore, the second question was how the statistically significant variables measuring patient characteristics and patient’s confidence in self-care were related.

Three regression equations were used to test the role of illness representation as a mediator. The results of the analyses are shown in Table 17. The first regression analysis showed that severity of illness was significantly correlated with negative illness representation (β = .299, p < .01), accounting for 9.0% of variance in illness representation, F (1, 127) = 12.49, p < .01. The second regression analysis demonstrated that severity of illness was significantly associated with patient’s confidence in self-care (β = -.378, p < .001), accounting for 14.3% of variance in patient’s confidence in self-care, F (1, 127) = 21.16, p < .001. The third regression analysis indicated that severity of illness (β = -.317, p < .001) and illness representation (β = -.203, p < .05) were independently associated with patient’s confidence in self-care, accounting for 18% of
variance in patient’s confidence in self-care, $F(2, 126) = 13.87, p < .001$). According to Baron and Kenny (1986), a perfect mediation occurs if the independent variable has no effect when the mediator is controlled. In the third equation, illness representation effected patient’s confidence in self-care. Simultaneously, severity of illness had an effect on patient’s confidence in self-care, but its effect was attenuated in the presence of illness representation. Therefore, illness representation mediates the relationship between severity of illness and patient’s confidence in self-care, but this mediation is partial.
Table 17.

Summary of Regression Analyses for Testing the Mediator of the Relationship between Severity of Illness and Patient’s Confidence in Self-Care (N = 129)

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Criterion</th>
<th>Standardized coefficients (β)</th>
<th>Significance</th>
<th>$R^2$ change</th>
<th>Significance of F change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Severity of illness</td>
<td>Illness representation</td>
<td>.299</td>
<td>.001</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regression 2</td>
<td></td>
<td></td>
<td></td>
<td>.143</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Severity of illness</td>
<td>Confidence in self-care</td>
<td>-.378</td>
<td>.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regression 3</td>
<td></td>
<td></td>
<td></td>
<td>.180</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Severity of illness</td>
<td>Confidence in self-care</td>
<td>-.317</td>
<td>.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Illness representation</td>
<td></td>
<td>-.203</td>
<td>.018</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Question Three**

Do selected patient characteristics predict patient’s confidence in self-care and patient’s perception of being well-cared for, when controlling for nursing unit characteristics?

To determine whether patient characteristics were better predictors of these two patient outcomes, a hierarchical multiple regression was performed for each outcome. To control for the effect of nursing unit characteristics, all nursing unit characteristic variables were entered in the first block, followed by individual patient characteristics. Table 18 shows severity of illness ($\beta = -.315, p < .01$) and illness representation ($\beta = -.234, p < .05$) were significant predictors of patient’s confidence in self-care. Patient characteristic variables explained 19.7% of variance in patient’s confidence in self-care, $F(6, 117) = 4.89, p < .001$. This finding shows a moderate influence of severity of illness and illness representation on patient’s confidence in self-care.

A second hierarchical multiple regression was conducted to identify whether patient characteristics were predictors of patient’s perception of being well-cared for. A hierarchical multiple regression showed that patient characteristics were not significant predictors of patient’s perception of being well-cared for, after controlling for nursing unit characteristics (see Table 19.). Patient characteristic variables explained 7.5% of variance in patient’s perception of being well-cared for, $F(6, 117) = 1.68, p = .131$. 
Table 18.

Summary of Hierarchical Regression Analysis for Variables Predicting Patient Characteristics on Patient’s Confidence in Self-Care (N = 129)

<table>
<thead>
<tr>
<th>Confidence in Self-Care</th>
<th>Standardized coefficients (β)</th>
<th>Significance</th>
<th>$R^2$ change</th>
<th>Significance of change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Block 1 Nursing unit characteristics</td>
<td></td>
<td></td>
<td>.017</td>
<td>.831</td>
</tr>
<tr>
<td>Nursing staff Experience</td>
<td>-.106</td>
<td>.513</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RNs to patient ratio</td>
<td>-.233</td>
<td>.237</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skill mix</td>
<td>-.029</td>
<td>.905</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nursing unit Competency</td>
<td>.192</td>
<td>.569</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group cohesion</td>
<td>-.040</td>
<td>.853</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Block 2 Patient characteristics</td>
<td></td>
<td></td>
<td>.197</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Age</td>
<td>-.053</td>
<td>.558</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>.081</td>
<td>.408</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>.057</td>
<td>.536</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Duration of illness</td>
<td>.117</td>
<td>.199</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Severity of illness</td>
<td>-.315</td>
<td>.001</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Illness representation</td>
<td>-.234</td>
<td>.016</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 19.

Summary of Hierarchical Regression Analysis for Variables Predicting Patient Characteristics on Patient’s Perception of Being Well-Cared For (N = 129)

<table>
<thead>
<tr>
<th>Perception of being well-cared for</th>
<th>Standardized coefficients (β)</th>
<th>Significance</th>
<th>R² change</th>
<th>Significance of change</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Block 1 Nursing unit characteristics</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nursing staff</td>
<td>.091</td>
<td>.591</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experience</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RNs to patient ratio</td>
<td>-.383</td>
<td>.065</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skill mix</td>
<td>-.083</td>
<td>.743</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nursing unit</td>
<td>.335</td>
<td>.343</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Competency</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group cohesion</td>
<td>-.256</td>
<td>.263</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Block 2 Patient characteristics</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-.073</td>
<td>.447</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>.144</td>
<td>.163</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>-.089</td>
<td>.360</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Duration of illness</td>
<td>-.003</td>
<td>.974</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Severity of illness</td>
<td>-.129</td>
<td>.181</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Illness representation</td>
<td>-.132</td>
<td>.194</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Question Four

Do nursing unit characteristics predict patient’s confidence in self-care and patient’s perception of being well-cared for when controlling for patient characteristics?

To determine whether nursing unit characteristics were better predictors of these two patient outcomes, a hierarchical multiple regression was performed for each outcome. To control for the effect of patient characteristics, all patient characteristic variables were entered in the first block, followed by nursing unit characteristics. The two analyses showed that nursing unit characteristics were not significant predictors of patient’s confidence in self-care and patient’s perception of being well-cared for. Nursing unit characteristic variables explained 1.5% of variance in patient’s confidence in self-care, $F(5, 117) = .44, p = .818$ and 6.0% of variance in patient’s perception of being well-cared for, $F(5, 117) = 1.62, p = .159$.

Question Five

Are there significant individual and contextual effects on patient’s confidence in self-care and patient’s perception of being well-cared for?

There was a significant individual effect, but a small non-significant contextual effect on patient’s confidence in self-care. In the regression analysis of research question 3, nursing unit characteristic variables preceded patient characteristic variables. Patient characteristic variables explained 19.7% of variance in patient’s confidence in self-care, $F(6, 117) = 4.89, p < .001$. In the regression analysis of research question 4, patient characteristic variables preceded nursing unit characteristic variables. The total model was not significant. Nursing unit characteristic variables explained 1.5% of variance in
patient’s confidence in self-care, $F(5, 117) = .443, p = .818$. A significant individual effect and a small non-significant contextual effect were demonstrated.

In the hierarchical analysis where variables were entered in a block, there were no significant individual and contextual effects on patient’s perception of being well-cared for. In the regression analysis of research question 3, nursing unit characteristic variables preceded patient characteristic variables. The overall model was not significant. Patient characteristics explained 7.5% of variance in patient’s perception of being well-cared for, $F(6, 117) = 1.68, p = .131$. This indicated a small non-significant individual effect of patients on patient’s perception of being well-cared for. In the regression analysis of research question 4, patient characteristics preceded nursing unit variables. The overall model was not significant. Nursing unit variables explained 6.0% of variance in patient’s perception of being well-cared for, $F(5, 117) = 1.62, p = .159$. A small non-significant effect of nursing unit characteristics was demonstrated.

**Question Six**

Which are potential individual and contextual predictors of patient’s confidence in self-care and patient’s perception of being well-cared for?

A stepwise multiple regression was conducted to examine potential individual and contextual predictors of each patient outcome. For patient’s confidence in self-care, the analysis showed that only individual variables were significant predictors. Severity of illness was the strongest predictor of patient’s confidence in self-care ($\beta = -.317, p < .001$), followed by illness representation ($\beta = -.203, p < .05$). Severity of illness alone explained 14.3% of variance in patient’s confidence in self-care, $F(1, 127) = 21.16, p <$
.001. Patient’s illness representation additionally explained 3.8% of variance in patient’s confidence in self-care, $F (5, 116) = 5.79, p < .05$ (see Table 20).

For patient’s perception of being well-cared for, severity of illness was the strongest predictor ($\beta = -.182, p < .05$) of patient’s perception of being well-cared for, followed by group cohesion ($\beta = -.178, p < .05$). Severity of illness alone explained 4% of variance in patient’s perception of being well-cared for, $F (1, 127) = 5.23, p < .05$. Group cohesion additionally explained 3.2% of variance in patient’s perception of being well-cared for, $F (1, 126) = 4.28, p < .05$ (see Table 20).

Table 20.

Summary of Simultaneous Regression Analysis for Variables Predicting Patient’s Confidence in Self-Care and Patient’s Perception of Being Well-Cared For ($N = 129$)

<table>
<thead>
<tr>
<th>Dependent variables</th>
<th>Independent variable</th>
<th>Standardized coefficients</th>
<th>$R^2$ change</th>
<th>$P$ value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Confidence in self-care</td>
<td>Severity of illness</td>
<td>-.317</td>
<td>.000</td>
<td>.143</td>
</tr>
<tr>
<td></td>
<td>Illness representation</td>
<td>-.203</td>
<td>.018</td>
<td>.038</td>
</tr>
<tr>
<td>Perception of being well-cared for</td>
<td>Severity of illness</td>
<td>-.182</td>
<td>.037</td>
<td>.040</td>
</tr>
<tr>
<td></td>
<td>Group cohesion</td>
<td>-.178</td>
<td>.041</td>
<td>.032</td>
</tr>
</tbody>
</table>
Summary

According to the current study, after controlling for nursing unit characteristics, patients’ severity of illness and illness representation were significant predictors of patient’s confidence in self-care. None of patient characteristics were significant predictors of patient’s perception of being well-care for. When controlling for patient characteristics, none of nursing unit characteristics could predict these two patient outcomes. There was a significant individual effect on patient’s confidence in self-care. There were no significant individual and contextual effects on patient’s perception of being well-cared for. When all patient characteristics and nursing unit characteristics were analyzed together, patient’s confidence in self-care was predicted by severity of illness and illness representation and patient’s perception of being well-care was predicted by severity of illness and group cohesion.
CHAPTER 5: DISCUSSION

This chapter discusses the findings from the study. Prior to discussion of the findings, the discussion of relationships between variables within the sets of patient characteristics and nursing unit characteristics are discussed. The chapter is organized by the order of the research questions. Accordingly, two patient outcomes, patient’s confidence in self-care and patient’s perception of being well-cared for are separately discussed. The implications and limitations of the study are presented. Finally, the recommendations for future research are introduced.

Relationships among Patient Characteristics

Patient’s age was significantly and inversely correlated with patient’s education ($r = -.217, p < .05$). This finding implies that older patients had less formal education than younger ones. This study is consistent with Malathum (2001) finding that age was moderately and negatively associated with education because the first Compulsory Primary Education Act in Thailand was put into effect in 1921. In this study, greater than half of patients (55.4%) were older than 60 years, and 66.2% of all patients achieved a primary school education only.

Patient’s age was positively correlated with severity of illness ($r = .207, p < .05$). This finding implies that older patients had greater severity of illness than younger patients. Patient age is related to decline in functional status and restorative skills. Age was also related to increasing numbers of chronic illness conditions (Williamson & Schulz, 1995). Together with the progression of chronic disease, age in chronically ill patients has been established as associated with severity of illness.
Patient’s gender was significantly correlated with patient’s education ($r = -.364$, $p < .001$). In this study, it was found that women had less formal education than men patients. Historically, Thai men were encouraged to seek higher education compared to Thai women. Thai women have the responsibility for housework. Therefore, female patients in this study, particularly with older age, had a lower level of formal education. More males finished high school and had a bachelor’s degree than females. Eighty percent of female patients had a primary school education.

Patient’s gender was significantly correlated with duration of illness ($r = .243$, $p < .01$). In this study, it was found that the highest mean duration of illness was the mean of patients with diabetes mellitus ($M = 12.28$; $SD = 9.68$). It was also found that the total number of 23 patients with diabetes mellitus consisted of 19 women and 4 men. Therefore, these data imply that women patients are more likely to have prolonged duration of illness compared to men.

Patient’s gender was significantly correlated with illness representation ($r = .177$, $p < .05$). Women patients held more negative illness representations. This finding is consistent with Lau-Walker (2004). In her study, it was found that women patients with myocardial infarction identified more symptoms than men. However, there was no difference in other attributes of illness representations in women and men (Lau-Walker, 2004). Many studies found that there was no effect of gender on illness representations (Cherrington, Moser, Lennie, & Kennedy, 2004; Eiser, Riazi, Eiser, Hammersley, & Tooke, 2001; Law, Kelly, Huey, & Summerbell, 2002). The possible explanation for this current finding is that, regarding the samples in this study, women were more likely to
have prolonged duration of illness, which led to increased consequences and symptoms. They might perceive that their diseases could not be cured or controlled.

Patient’s severity of illness was positively correlated with illness representation ($r = .300, p < .01$). This finding suggests that patients with greater severity of illness were likely to have a more negative illness representation. It is recognized that somatic experiences or symptoms are a focus for the elaboration of illness representation (Leventhal et al., 1992). Patients with greater severity of illness were those who had more identity (that is the labels, which are one aspect of illness representation), such as reports of dizziness and shortness of breathing that inhibit their abilities to perform activities. Therefore, severity of illness emphasizing functional health or clinical disability was positively related to illness representation.

*Relationships among Nursing Unit Characteristics*

There was a negative significant correlation between RNs to patient ratio and skill mix ($r = -.466, p < .001$). The greater the number of patients assigned to an RN in each shift, the fewer the number of RNs per total nursing staff in each unit. This implies that nurses in units with small numbers of RNs had more assigned patients to provide nursing care in each shift. There was a highly positive significant correlation between RNs to patient ratio and nursing unit competency ($r = .834, p < .001$). Nurses in the units with RNs having more assigned patients to provide nursing care in each shift perceived that they were more competent. Nurses having a greater number of patients to provide nursing care in each shift had more work to organize and performed many skills within a limited time. It could be the case that these nurses perceived that they had more nursing skills
and experience. There was a small significant correlation between RNs to patient ratio and group cohesion \( (r = .225, p < .05) \). The RNs in the units with more assigned patients to provide nursing care in each shift perceived that there were forces influencing them to stay in a group. Nurses who worked in the units with more patients to provide nursing care had more opportunity to work with and help other nurses. These nurses might have a greater perception of efficiency, linking, feeling of belonging, and desire to work with a group. Skill mix was significantly correlated with nursing unit competency and group cohesion \( (r = -.472, p < .001; r = .210, p < .05, \) respectively). This finding suggests that nurses working in the units with fewer numbers of RNs compared to the total nursing staff perceived that nurses in their units were more competent and had less force influencing them to stay in a group. RNs who worked in the units with a small number of RNs compared to the total nursing staff were more responsible in nursing care and frequently exercised highly competent nursing skills. Therefore, nurses in these units might perceive that they were more competent. However, RNs in these units were more likely to work individually because there were limited numbers of RNs in each shift. They had less opportunity to contact each other. Therefore, these nurses may have perceived less force to stay in a group.

In addition, nursing unit competency and group cohesion showed a positive significant correlation \( (r = .563, p < .001) \). Nurses who perceived that nurses in their units were more competent, also perceived that there were more forces influencing them to stay in a group. Nursing unit competency consisted of significant domains that facilitate forces to stay in a group. For example, monitoring and ensuring quality of health care,
interpersonal communication, and leadership abilities relate to unit productivity, efficiency, and linkage.

**Research Question One**

Do selected patient characteristics (i.e., age, gender, education, duration of illness, severity of illness, and illness representation) and nursing unit characteristics (i.e., nurse education, nurse experience, nurse staffing, nursing unit competency, and group cohesion) relate to the selected patient outcomes including patient’s confidence in self-care and patient’s perception of being well-cared for?

*Relationships between Patient Characteristics and Patient’s Confidence in Self-Care*

A Pearson Moment Correlation analysis was conducted to examine the relationships among patient’s age, gender, education, duration of illness, severity of illness, illness representation, and confidence in self-care. The correlation matrix illustrates a moderate significant negative relationship between severity of illness and confidence in self-care ($r = -.378$, $p < .001$). The measure of severity of illness, the Modified Rankin Scale, focuses on functional health and emphasizes clinical disability. Patients who were more severely ill were those who felt they had limitations to perform self-care. If this is the case, then they might perceive less confidence to perform self-care abilities. This finding is consistent with many studies. For example, it was found in patients with sickle cell disease that less pain severity was associated with higher level of self-efficacy (Edwards et al., 2001). Although physical functioning of patients with chronic heart failure was not a significant predictor of self-care maintenance, Chriss and
colleagues (2004) found that comorbidity measured by preexisting diseases was a significant predictor of self-care maintenance (Chriss, Sheposh, Carlson, & Riegel. 2004). Crokett and colleagues (2000) found an association between severity of illness measured by the number of co-morbidities of discharged patients and the readmission rate in patients with chronic airflow limitations.

Illness representation was negatively correlated with confidence in self-care ($r = -0.299$, $p < .01$). According to Leventhal and colleagues (1992), illness representation serves as a guide to action. When patients are threatened by illnesses, they will create representations. These representations shape the procedures for coping or controlling the illness, which facilitate patients performing health related behaviors. For patients with negative illness representations, self-care activities that they perceived that they need could be complex and might be difficult for them to accomplish. Then, they may lack confidence to manage these activities. This study found that patients who had more negative illness representations had less confidence in self-care. This finding is consistent with a study conducted by Lau-Walker (2004), where it was found that there was a significant relationship between illness representation and self-efficacy in patients with myocardial infarction. The greater patients’ perceive consequences of the heart condition; the lower was the general self-efficacy regarding confidence in ones ability to cope with the condition (Lau-Walker, 2004). It was explained that patients’ perceptions of the extent to which their condition would affect them and their lifestyles was connected to their general level of confidence (Lau-Walker, 2004). A study in Thailand found a negative significant relationship between identity (symptoms) and medication-taking
behavior \((r = -.33, p < .01)\) (Leelacharas, 2005). Hypertension patients who had fewer symptoms had better medication-taking behavior.

**Relationships between Patient Characteristics and Patient’s Perception of Being Well-Cared For**

The correlation matrix illustrates a small significant negative relationship between severity of illness and patient’s perception of being well-cared for \((r = -.199, p < .05)\). Patients with more severity of illness were more likely to perceive a lower sense of being well-cared for. Personal images of health influence patient’s evaluations of care (Calnan, 1988). Severity of illness was defined as functional health, emphasizing clinical disability. Iezzoni and colleagues (2004) revealed that persons whose functioning worsened displayed significantly greater dissatisfaction with overall quality of care. Patients in poor health reported significantly more problems than did healthier patients (Hargraves et al., 2001). Medicare beneficiaries with various functional impairments reported significantly higher rates of dissatisfaction with their health care experiences along a range of dimensions (Iezzoni, 2003). A potential explanation is that patients with greater needs for treatment and services had more interactions with the health care providers and therefore more opportunities to be disappointed. They were more likely to require timely care involving a range of services and to want information about their conditions and prognoses than others. Patients might then be perceived as not responding to all their needs.
Relationships between Nursing Unit Characteristics and Patient’s Confidence in Self-Care

The correlation matrix showed no significant correlation between nursing unit characteristics and patient’s confidence in self-care. This study proposed patient’s confidence in self-care as a nursing sensitive patient outcome. In the literature, many studies have examined the relationship between nursing unit characteristics and adverse patient outcomes. The possible explanation for this non-association finding is that the chosen characteristics of nursing units might not sensitive to patient outcomes, particularly patient’s confidence in self-care.

Although the literature is inconsistent, many studies have demonstrated an association between nursing unit characteristics, particularly nurse staffing and adverse patient outcomes (Blegen & Vaughn, 1998; Khumyu, 2002; Mark et al., 2003; McGillis-Hall et al., 2004; Seago, 2005; and Sasichy-Akkadechanunt et al., 2003). The selected nursing unit characteristics in this study may relate more to adverse patient outcomes than this positive patient outcome. Alternatively, nurses may not have enough time to perform patient educational activities, which would presumably positively influence a patient’s sense of being able to provide self-care. Another explanation is that the selected nursing unit characteristics may not reflect actual nursing activities, which are directly delivered to patients. Therefore, non association might exist.
Relationships between Nursing Unit Characteristics and Patient’s Perception of Being Well-Cared For

There was a small negative significant correlation between group cohesion and patient’s perception of being well-cared for ($r = -.195, p < .05$). Group cohesion had an inverse relationship with patient’s perception of being well-cared for. Patients in the units that had high average scores of group cohesion perceived by nurses reported low scores in their perception of being well-cared for. Group cohesion in this study referred to the perception of nurses working in acute medical care units and their perception of all forces influencing them to stay in a group. It might be conjectured that nurses in a highly cohesive group who value social interaction spend time on social interaction, not on group tasks. Those nurses might enjoy working and interacting with their colleagues. They might have more interaction with nurses in their team, which might create less time for their patients. Then patients might perceive that they had lower feelings of being well-cared for.

In the literature, group cohesion was a variable that tended to have an association with positive organizational outcomes, such as nurses’ job satisfactions and lower anticipated turnover (Hinds et al., 1998; Larrabee et al., 2003; Shader et al., 2001). In addition, many studies reported that cohesion was positively related to performance (Cohen & Bailey, 1997; Gully, Devine, & Whitney, 1995). This study seems to show that there was a lack of cohesiveness and performance. Mullen and Copper (1994) argued from their meta-analysis of cohesiveness-performance effects that even groups that require a high degree of interaction for successful performance did not exhibit a stronger
cohesiveness-performance effect. This effect did indeed exist. The lack of this effect resulted from the variation in reasonable and predictable ways. The cohesiveness-performance effect was strong in small groups and predominant by commitment to the task (Mullen & Copper, 1994). Group cohesion measured in the current study did not underscore the commitment to the task. Therefore, the cohesiveness-performance effect was unclear.

Research Question Two

How the statistically significant variables measuring patient characteristics and patient’s confidence in self-care are related?

Testing for mediation revealed that illness representation is a partial mediator of the relationship between severity of illness and patient’s confidence in self-care. This suggests that patients with greater severity of illness might have a high level of confidence in self-care when they held a more positive illness representation.

It is recognized that severity of illness is a significant factor predicting health outcomes (Rosenthal et al., 1995; Smith, 1997). According to the Self-Regulation Model (Leventhal et al., 1992), severity of illness may be viewed as a health threat, which stimulates patients to establish illness representations. Then, these representations guide patients to perform coping procedures. For example, patients with chronic obstructive pulmonary disease who perceived that this disease could not be cured or controlled and had serious consequences were those who were more likely to lack confidence in self-care. Conversely, if these patients have appropriate information or support from care providers, more positive illness representations could be constructed, which in turn
promote confidence in self-care. This finding suggests that the effect of severity of illness on confidence in self-care could be improved if patients had more positive illness representations. Patients who were in serious condition and perceived more positive illness representations such as less consequence, controllable/curable conditions, and few symptoms might feel more confidence taking care of themselves.

Research Question Three

Do selected patient characteristics consisting of age, gender, education, duration of illness, severity of illness, and illness representation predict patient’s confidence in self-care and patient’s perception of being well-cared for, when controlling for nursing unit characteristics?

Patient Characteristics and Patient’s Confidence in Self-Care

When controlling for nursing unit characteristics, the hierarchical multiple regression showed that severity of illness ($\beta = -.315, p < .01$) and illness representation ($\beta = -.234, p < .05$) were significant predictors of patient’s confidence in self-care. This finding shows moderate influences of severity of illness and illness representation on patient’s confidence in self-care. Patient characteristic variables accounted for 19.7% of variance in patient’s confidence in self-care.

According to the QHOM, the theoretical framework underpinning this study, it is proposed that patient characteristics have a direct and indirect effect on patient outcomes (Mitchell et al, 1998). Similarly, in a model tested by Smith (1997), severity of illness is strongly related to patient outcome.
This finding confirms that there is an association between severity of illness and patient outcomes. An individual with more complex illnesses, multiple coexisting diseases, or other significant risk factors generally develop more complications and experience worse outcomes, even with excellent care, than healthier individuals (Iezzoni, 2003). Many studies have shown relationships between severity of illness and variables related to patients’ self-care (Chriss, et al., 2004; Crokett et al., 2000; Edwards et al., 2001; Schwarz & Elman, 2003). Schwarz and Elman (2003) found that patient’s severity of cardiac illness and functional health status influenced a variable related to self-care abilities, namely hospital readmission over 3 months.

Severity of illness influences patient’s confidence in self-care. We might expect that when discharged from the hospital, chronically ill patients usually have existing impairments, such as weakness, lethargy, swelling, or hemiperesis. These impairments indicate their severity of illness. In patients with high level of illness severity, their physical, social, and emotional functions were limited by their existing illnesses. Existing illnesses may cause patients to feel uncomfortable to do self-care and to be concerned about self-care. They might gain better understanding of the self-care needed but have less energy to implement self-care, which in turn could decrease their confidence in self-care.

Patients with high severity of illness require more nursing interventions to support their confidence in self-care. Since patients tend to be admitted in more severe conditions and stay a shorter time, nurses should be concerned more about whether patients have enough confidence to provide self-care at home or community.
The hierarchical multiple regression showed the contributions of illness representation on patient’s confidence in self-care, when controlling for nursing unit characteristics. Illness representation was a significant predictor for patient’s confidence in self-care ($\beta = -.234, p < .05$). This finding illustrates a moderate influence of illness representation on patient’s confidence in self-care. The relationship between illness representation and patient’s confidence in self-care was considered in the Self-Regulation Model (Leventhal et al., 1998). Leventhal’s model reflects similarities in conceptual structure to Social Learning Theory (self-efficacy)’s Bandura (Leventhal et al., 1998). Self-efficacy emphasizes a person’s belief or judgment in his or her capabilities to perform a specific behavior to achieve a desired outcome. This study found that chronically ill patients with more negative illness representation, such as perception of severe consequences and being unable to control their illnesses had lower confidence in self-care abilities. The explanation of this relationship is that patients with negative perceptions of their illnesses might perceive that their illnesses were too difficult or serious for them to manage, which then decreased their confidence in self-care abilities.

Consistent with these studies, Lau-Walker (2004) found that consequences were a predictor of general self-efficacy; and timeline was a predictor of exercise and diet self-efficacy. Patients who were more likely to view their heart condition as having fewer consequences for their lives and to feel in control of the situation had high general self-efficacy (Lau-Walker, 2004). Jessop and Rutter (2003) found that representation of asthma contributed significantly to the prediction of intention to adhere. Asthma patients
who thought that their asthma could be cured and/or controlled (positive illness representation) were more likely to intend to adhere (Jessop & Rutter, 2003).

Patient Characteristics and Patient’s Perception of Being Well-Cared For

The hierarchical multiple regression showed no contribution of patient characteristics on patient’s perception of being well-cared for, when controlling for nursing unit characteristics. Although, the zero order correlational analysis demonstrated that patient’s perception of being well-cared for had a significant negative relationship with severity of illness ($r = -.199, p < .05$). Severity of illness was not a significant predictor on patient’s perception of being well-cared, when nursing unit characteristics were taking into accounted in the first step.

Although most studies of patient’s perception of being well-cared for show its relationships to patient demographics. Particularly, patient age shows the strongest correlation with satisfaction (Lashinger & Almost, 2003). Jumpamool (2003) found that patient age and sex were significant predictors of hospitalized patient’s satisfaction in Thailand. The current finding is inconsistent with those studies. The possible explanation might relate to the characteristics of chronically ill patients. In general, chronically ill patients have different experiences of health care services because of repeated contact with health services. The different experiences of health care services might have a significant effect on patient’s perception of being well-care for in hospitalized chronically ill patients. Calnan (1988) stated that the level of previous experience of using health services influence patient’s evaluations of care. For example, patients with positive experiences tend to be optimistic with health care providers. However, Fitzpatrick and
Hopkins emphasized that repeated contact with services may co-occur with having more information and knowledge, which can lead to a more informed and critical evaluation of service (Avis, Bond, & Arther, 1995). Thus, patient’s perception of being well-cared for is more dependent on patient’s past experiences of health services. Patient demographics and other individual characteristics are not significant predictors in this study. This finding is consistent with a study in diabetic patients. Bhattacharyya and colleagues (2002) found no variation of patient satisfaction when diabetic patients were stratified according to sex, age, and mode of treatment (Bhattacharyya, Christodoulides, Kaushal, New, & Young, 2002).

Although the finding showed non statistical significance, clinically significance exists. Without statistical significance, the standardized coefficient (β) value of a predictor greater than .1 is considered to show a pattern of the association between the predictor and the outcome of interest (J. Verran, personal communication, September 6, 2006). The βs of gender, illness representation, and severity of illness were .144, -.132, and -.129, respectively (see Table 19.). Therefore, it implies that there were some influences of individual variables including gender, illness representation, and severity of illness on patient’s perception of being well-cared for, when nursing unit variables were controlled.

**Research Question Four**

Do nursing unit characteristics consisting of nurse education and nurse experience, nurse staffing, nursing unit competency, and group cohesion predict patient’s confidence in self-care and patient’s perception of being well-cared for, when controlling
for patient characteristics? This research question addresses the nursing domains that
directly affect patient outcomes as perceived by individual patients. Nursing unit
characteristics were measured from a nursing perspective.

*Nursing Unit Characteristics and Patient’s Confidence in Self-Care*

Multiple regression analysis showed that nursing unit variables in this study did
not significantly predict patient’s confidence in self-care, when controlling for patient
characteristics. Non-significant findings might result from the small variation of nursing
unit variables compared to the variation of outcome variables and the effect of
multicollinearity. Therefore, the ability to detect statistical significance was limited.
Although, the finding showed non-statistical significance, it may be clinically significant.
The standardized coefficients (β) of nurse to patient ratio, nursing unit competency, and
nurse experience were -.233, .192, and .106 respectively, which indicated some
relationship between predictors and patient’s confidence in self-care. Patients who
perceived less confidence in self-care were more likely to be from the unit where nurses
had a greater number of patients to provide nursing care in each shift. The more the
nurses had experiences, the more the patient’s confidence in self-care.

Literature supporting the relationship between nursing unit characteristics and
variables related to patient’s confidence in self-care is sparse. Many studies reveal the
association between nurse staffing and quality and safe care. However, the findings are
mixed. Jennings and McClure (2004) recommend that the strength of the associations
depended on the unit of analysis, what outcomes were examined, and in which patient
populations were studied.
Many studies reveal the associations of nursing unit characteristics, i.e. nurse staffing, nursing care hours, and types of nursing units and adverse patient outcomes (Blegen et al., 1998; Blegen & Vaughn, 1998; Needleman, Buerhaus, Mattke, Stewart, & Zelevensky, 2002; Person et al., 2004). Nurse staffing was frequently found in many studies that demonstrated the association between nurse staffing and adverse patient outcomes (Stanton, 2005). In the current study, the lack of statistically significant finding of the relationship between nursing unit characteristics and patient’s confidence in self-care may result if the selected outcome is not sensitive to the context of nursing care. Adverse patient outcomes may be more sensitive to nursing unit characteristics. Alternatively, the measures used to index nurse staffing may not reflect the extent to which nurses perform patient educational activities that promote patient’s confidence in self-care.

It is recognized that nursing competency contributes to nursing performance, which in turn affects patient outcomes (Ashworth & Morrison, 1991; Doran et al, 2002; George et al, 2002; Westgaard, 1999). In this sample, the standardized coefficient of nursing unit competency ($\beta = .192$) showed that patients who perceived more confidence in self-care were those from units that nurses perceived higher ability to perform nursing care with skills and knowledge. Doran and colleagues (2002) investigated the influences of nurses’ role performance on patient outcome achievement. Nursing performance was measured from nurses. They found that nurses’ independent role and nurse communication had a positive effect on therapeutic self-care ability of patients in general medical-surgical and cardiac units (Doran et al., 2002).
There is a difference between what individuals should be able to do at an expected level of achievement and what they actually do in the real life settings (While, 1994).

There is an exception; a number of factors can affect provider behaviors including: (a) social factors, such as peer pressure, and social values; (b) organizational factors, such as working conditions, monitoring systems, and training; and (c) provider motivation, such as expectations, individual goals, and readiness to change (Kak, Burkhalter, & Cooper, 2006). The current study did not directly measure nursing performance, which may have more direct effects on this outcome. There might be a number of factors affecting nursing unit competency, which in turn influences nursing performance. Therefore, while this study did not demonstrate a significant relationship between competence or knowledge and patient outcomes, other nursing unit factors that were not measured might influence outcomes.

**Nursing Unit Characteristics and Patient’s Perception of Being Well-Cared For**

Although bivariate correlations showed that group cohesion had a significantly negative relationship with patient’s perception of being well-cared for \( (r = -0.195, p < 0.05) \), group cohesion was not a significant predictor of patient’s perception of being well-cared for, when controlling for patient characteristics. Finding no association between group cohesion and patient outcomes may be that the association was not strong enough to be a predictor in the model, when controlling for other variables. In addition, other nursing unit characteristics in this study did not predict patient’s perception of being well-cared for. Similar to the findings from patient’s confidence in self-care, the small variation in nursing unit variables might limit the ability to detect statistically significant
relationships. Likewise, the standardized coefficients (β) of nurse to patient ratio, nursing unit competency, and group cohesion were greater than .1 (-.383, .335, and -.256 respectively). The standardized coefficient values greater than .1 indicate some association between predictors and dependent variable in this study (J. Verran, personal communication, September 6, 2006).

Many studies have found that nursing unit characteristics were associated with patient’s perception of being well-cared for. Doran and colleagues (2002) found that patient satisfaction with nursing care was higher on units where nurses reported good communication among healthcare team members. Nurse demographics and nurse staffing were related to patient satisfaction. For example, it was found that staff adequacy and skill mix or percentage of RNs on units were associated with a higher level of patient satisfaction (Mark et al., 2003; Moore et al., 1999; Vahey et al., 2004). In Thailand, Khumyu (2002) found that nurse-to-patient ratio was a significant predictor of patient satisfaction with nursing care after controlling for nurses’ job satisfaction and proportion of RNs. Controlling for patient characteristics, Sasichy and colleagues (2003) found that the ratio of total nursing staff to patients was the best predictor of in-hospital mortality in Thailand. However, Jumpamool (2003) found that percentage of RNs to total nursing staff and nursing hours per patient days were not significant predictors of hospitalized patient’s satisfaction in Thailand, when controlling for patient characteristics and nursing demographics.

In Thailand, there are problems with the workforce in general hospitals. The number of personnel is not consistent with the increase in workload. Health agencies
have to carry a greater burden of responsibilities according to the existing government programs/projects, the national socioeconomic development plan, and new programs/projects while the number of personnel decrease, resulting in inadequate staff to perform the tasks efficiently in response to the ministry’s policies (MOPH, 2004e). As the workload increases, nurses might help each other and perceive that they worked hard and established productivity and efficiency. However, nurses working in the units with high workload might not have enough time to provide appropriate care for all patients, which could decrease patient’s perception of being well-cared for.

The current finding shows that nurse experience and skill mix were not significantly associated with patient’s perception of being well-cared for. This finding is consistent with a few studies. Larrabee and colleagues (2004) found that the ratio of RNs to all nursing staff and patient to RN ratio were not predictors of patient satisfaction among patients in 7 nursing units. In Thailand, Jumpamool (2003) found that nursing demographics including nurse’s age and years on current unit did not contribute to patient satisfaction with nursing care.

Although a non significant finding, this study shows some association between contextual variables and patient’s perception of being well-cared for. According to the standardized coefficients of nursing unit variables, this sample indicated that nurse to patient ratio, nursing unit competency, and group cohesion appear to be associated with patient’s perception of being well-cared for.
Research Question Five

Are there significant individual and contextual effects on patient’s confidence in self-care and patient’s perception of being well-cared for?

Contextual analysis was used to answer this question. The contextual analysis is the systematic study of group effects on individuals. It is the study of the role of the group context on actions and attitudes of individuals (Iversen, 1991). Mark, Salyer, and Wan (2000) noted that a contextual effect exists when the explained variance of a model containing both a higher and lower hierarchical level was significantly greater than a model containing only the lower-level or only the higher-level variables. In addition, this model can determine the variance in patient’s confidence in self-care and patient’s perception of being well-cared for, which was accounted for by these potential independent variables.

*Individual Effect and Contextual Effect on Patient’s Confidence in Self-Care*

Hierarchical regression analysis responding to research question three revealed that there was a significant influence of patient characteristics on patient’s confidence in self-care ($R^2$ change = .197, $p < .001$), after removing the contribution of nursing unit characteristics. Patient variables explained 19.7% of variance in patient’s confidence in self-care. The hierarchical regression analysis responding to research question four revealed that there was no significant effect of nursing unit characteristics on patient’s confidence in self-care, when controlling for patient characteristics. Nursing unit characteristics explained an additional 1.5% of variance in patient’s confidence in self-
care. There was a significant individual effect on patient’s confidence in self-care. A significant contextual effect was not found among this sample of patients.

Regarding the particular individual and contextual variables used in these analyses, it was suggested that patient’s confidence in self-care had a greater significant effect only from individual patient characteristics. It also implies that patient’s confidence in self-care is more sensitive to patient characteristics than nursing unit characteristics. Context could inhibit or facilitate the ability of the nurse to focus attention of particular patient characteristics, in this case, illness representation.

Although the contextual effect was not statistical significant, clinical significance may be indicated but was not specifically tested in this study. The patterns of association between contextual variables (e.g., nurse to patient ratio, nursing unit competency, and nurse experience) and patient’s confidence in self-care in this sample do indicate standardized Betas greater than .10.

According to this finding, this study does not suggest that nursing unit characteristics have no effect on patient’s confidence in self-care. The particular variables and data from samples used in this analysis might not directly represent the nursing unit attributes affecting patient’s confidence in self-care. Other nursing unit attributes, such as nurse performance, nursing care model, or patient education may affect this patient outcome.
Individual Effect and Contextual Effect on Patient’s Perception of Being Well-Cared For

Regarding the previous hierarchical regression analysis responding to research question three and four, there was neither a significant individual effect of patient characteristics nor a significant contextual effect of nursing unit characteristics on patient’s perception of being well-cared for, after removing the contribution of nursing unit characteristics and patient characteristics, respectively. The individual variables (e.g., gender, severity of illness, and illness representation) and contextual variables (e.g., nurse to patient ratio, nursing unit competency, and group cohesion) have an association with patient’s perception of being well-cared for in this sample.

This finding supports that patient’s perception of being well-cared for is a multidimensional variable that is simultaneously influenced by several factors. Only one factor cannot contribute to this patient outcome. Comley and Beard (1998) suggested that patient satisfaction is a function of personal intrinsic factors (e.g., age, sex, and socioeconomic status) and external organizational factors (e.g., nursing care delivery systems, provider competence, and promptness of service), which is not completely controlled by health care providers.
Research Question Six

Which are statistically significant individual and contextual predictors of patient’s confidence in self-care and patient’s perception of being well-cared for?

Predictors of Patient’s Confidence in Self-Care

It was found that when all variables of patient characteristics and nursing unit characteristics were entered into the multiple regression model, severity of illness was the strongest predictor of patient’s confidence in self-care ($\beta = -0.317, p < .001$), followed by illness representation ($\beta = -0.203, p < .05$). Severity of illness alone explained 14.3% of variance in patient’s confidence in self-care. Patients’ illness representation added an additional 3.8% of variance in patient’s confidence in self-care (Table 20).

Patient characteristics were the only significant predictors of patient’s confidence in self-care. Severity of illness was a stronger predictor of patient’s confidence in self-care than illness representation. The possible explanation was that people rely on their somatic states in judging their capabilities. They interpret their physical reactions and tension as sign of vulnerability to poor performance (Bandura, 1994b). People’s beliefs about their capabilities affect what they choose to do, how much effort they mobilize, and how long they will persevere in the face of difficulties. When people lack a sense of self confidence, they do not manage situations effectively even though they know what to do and possess the requisite skills (Bandura, 1994a). Patients with greater severity of illness in the current study were those who had physical disabilities ranging from abilities to carry out all duties and activities to severe disability (e.g., bedridden, and incontinent) that require constant nursing care and attention. Self-care behaviors in chronically ill
patients concern exercise, adherence to medication, dietary control, and monitoring consequences and symptoms. These activities are more likely to rely on both physical and cognitive functions. Consequently, the greater the severity of illness, the less the patient may feel confident in self-care.

Patient’s illness representations guide coping strategies. In the literature, negative illness representations produce negative outcomes. Compared to severity of illness, this study found that illness representation had less effect on predicting patient’s confidence in self-care. This could be explained by the self-regulation model that illness representations are influenced by patients’ experiences and information. It is recognized that highly concrete information plays a central and critical role in the formation of illness representations and the plan for action. For effective self-regulation, patients need concrete information on the threat and on methods of coping (Leventhal et al., 1980). This suggests that efforts to enhance patient’s confidence in self-care might succeed or fail depending on the extent to which patients perceived somatic experiences and whether health care providers present information needed to generate a valid and believable danger and an effective image of a coping reaction. Providing information on methods of coping to patients may improve patient’s confidence in self-care. Regarding the model of this analysis, illness representation had less power to predict patient’s confidence in self-care than patients’ somatic experiences or severity of illness.

**Predictors of Patient’s Perception of Being Well-Cared For**

It was found that when all variables of patient characteristics and nursing unit characteristics were entered into the multiple regression model, severity of illness and
group cohesion were significant predictors of patient’s perception of being well-cared for 
(β = -.182, p < .05; β = -.178, p < .05, respectively). Severity of illness accounted for 4%
and group cohesion explained an additional 3.2% of variance in patient’s perception of
being well-cared for.

This finding implies that patient’s perception of being well-cared for is more
sensitive to severity of illness compared to a nursing unit characteristic such as group
cohesion. Patient’s perception of being well-cared for is sensitive to changes in patient’s
severity of illness, but that sensitivity varies by the level of group cohesion in each unit.
Thus, severity of illness was the strongest predictor of patient’s perception of being well-
cared for. Iezzoni (2003) revealed that functional status significantly predicted patient
outcomes, such as illness complications, resource consumption, and satisfaction with
care. The possible explanation of the relationship between severity of illness and patient’s
perception of being well-cared for is previously illustrated in the research question one
and three.

The quality of interpersonal relationships between nurses and patients has been
shown to be one aspect of nursing behavior that influences patient satisfaction
(Laschinger & Almost, 2003). It might be more comfortable for patients to evaluate
nursing care from nurses’ behaviors rather from nurses’ knowledge or competency. The
extent to which nurses pay more attention to patients increases patient’s perception of
being well-cared for. Therefore, although an inverse relationship, group cohesion
reflecting the integration and collaboration of nurses in each unit might indicate the
extent to which nurses pay attention to patients, which then influences patient’s perception of being well-cared for.

This finding suggests that group cohesion did not necessarily result in positive consequences. One reason that might explain this lack of association is that this relationship occurred between individual patient’s perception and nursing staff perception. This relationship might have been affected by various confounding factors, such as nurses’ commitment to the tasks, resources available, nursing care model, size of nursing unit, and other patient characteristics. For example, the larger groups are more likely to lack coordination, provide insufficient opportunity to speak one’s mind, and use time poorly (Steiner, 1972). The larger groups might report a lower level of group cohesion; while a small group might report a higher level of group cohesion. However, a small number of nursing staff might not provide comprehensive and appropriate nursing care to patients. Then, patients in the units with high level of group cohesion, but small units, might perceived the lower level of being well-cared for.

Other nursing unit characteristics do not predict patient’s perception of being well-care for in this study. The possible explanation may result from nursing workload, previously mentioned in the Nursing Unit Characteristics and Patient’s perception of Being Well-Cared For: Non Significant Predictor subsection, as well as non-nursing activities. The non-nursing activities may inhibit the contribution of nursing on patient outcomes. Tillman and colleagues (1997) found through qualitative analysis that nurse performance of non-nursing functions results in loss of time from activities requiring professional nurse expertise (Tillman, Salyer, Corley, & Mark, 1997). Non-nursing functions are, such
as capturing lost charges, and attempting to obtain supplies needed in patient care. Nurses have to manage these non-nursing functions instead of providing nursing care. Although nursing staff perceived that they were competent, their competency was inhibited by non-nursing functions. Then, nurse staffing and nursing unit competency are not significant predictors of patient’s perception of being well-cared for.

Implications

The implications of this study include implications for nursing practice, nursing science, and nursing research.

For Nursing Practice

The findings of this study reinforce the need for acute care nurses to be aware of what chronically ill patients perceive as health threats that may directly affect a patient’s confidence in performing self-care activities. The findings also inform nurses to understand how the severity of illness and patient’s illness representations affect patient’s confidence in self-care. Through understanding the role of illness representation as a mediator between severity of illness and patient’s confidence in self-care, it is suggested that nurses can improve patient’s confidence in self-care in severely ill patients by providing nursing interventions and information that promote positive illness representations.

Hospitalization is a short span of time in the lives of most patients. Self-care abilities are crucial for maintaining patients safely at home. Nurses need to ascertain how patients and families perceive their illness and how patients feel in terms of confidence to perform self-care abilities. Assessing an individual patient’s perception of illness and
confidence in self-care should be an essential task of nursing care for chronically ill patients.

*For Nursing Science*

This study confirms the QHOM that patient characteristics, particularly patient state characteristics including severity of illness and illness representation affect patient’s confidence in self-care. In addition, this finding suggests that there is an interaction of patient characteristics within individual patients. It was found that illness representation was a mediator between the relationship between severity of illness and patient’s confidence in self-care. For nursing unit characteristics, these selected nursing unit variables might not be specific to patient’s confidence in self-care. However, it was found that one nursing unit characteristic was associated with a patient outcome. Although, the finding showed a negative effect, group cohesion was a significant predictor of patient’s perception of being well-cared for. Patient’s confidence in self-care is more specific to individual patient variables rather than the studied nursing unit characteristics. However, patient’s perception of being well-cared for is sensitive to both patient and nursing unit variables. To improve the quality of nursing care through monitoring patient outcomes, nurses should have specific patient outcomes and understand specific factors contributing to these outcomes. The specific factors should include, at least, individual patient characteristics and nursing unit characteristics. Therefore, the QHOM is a significant nursing model that provides a comprehensive theoretical framework for nursing.
For Nursing Research

It is recognized that contextual analysis can identify the effect of group context on actions and attitudes of individuals (Iversen, 1991). In an era of quality initiative health care, the identification of factors contributing to patient outcomes is significant. Hospitalized patients have their own experiences as well as experiences from different health care providers, such as physicians, nurses, and physical therapists in an episode of hospitalization. Not only do the characteristics of health care providers influence patient outcomes, but also the characteristics and administration of units and institutions providing care to patients affect patient outcomes. Therefore, factors affecting outcomes of hospitalized patients are multilevel, such as individual level, nursing unit level, and hospital level. The contextual analysis provides an analytical framework for nurse researchers who are interested in the identification of factors contributing to patient outcomes from multilevel variables.

Limitations

This current study has some limitations. The limitations relate to several potential methodological, statistical, theoretical, and instrumentation constrictions.

Methodological and Statistical Constrictions

The methodological and statistical constrictions concern the procedures of collecting data, examining the distributions of scores, the correlations between and among independent variables, and generalizability.

The procedure of collecting data from each patient was the face-to-face questionnaire interview. The investigator asked individual patients whether they would
like to read the questionnaires or let the investigator read for them. All patients wanted the questionnaires read. Therefore, all data were collected by interview with patient responses following each item in the questionnaires. It is recognized that face-to-face administration provides a more optimistic picture of health than does self-administration (Weinberger, Oddone, Samsa, & Landsman, 1996). This may result in the patient’s confidence in self-care scores being negatively skewed. The $z$-score of skewness of patient’s confidence in self-care was -2.91 (negative skewed). The value of the skewness indicated a pile-up of scores on the right of the distribution. This means that there were more patients had high scores of confidence in self-care.

The distributions of the scores of patient perceptions of their confidence in self-care and being well-cared for were skewed. This skew is likely to decrease variability in patient perception scores. The skew may result from instruments that are insensitive to detect importance difference in patient perceptions. Skewing is problematic when data are analyzed using statistical tests that assume a normal distribution of dependent variables. In addition, these data characteristics lead to difficulties in determining true effects that may exist.

The correlations between the independent variables were examined for possible multicollinearity. It is recognized that somatic experiences or symptoms are a focus for the elaboration of illness representations (Leventhal et al., 1992). As a result, severity of illness emphasizing the functional health or clinical disability was found positively related to illness representation. Likewise, nurses who had many patients to provide nursing care perceived greater competence. As a result, it is difficult to obtain completely
independent measures of patient characteristics and nursing unit characteristics. The average VIF values greater than 1 and the tolerance values below 0.1 may bias the regression model (Field, 2002). For the analyses in this study, the average VIF value was 1.1072 and the average tolerance was 0.9092. Therefore, the results of multiple regression analyses may be affected by a strong correlation between RNs to patient ratio and nursing unit competency. Interpretation of the relative contribution of each variable will be discussed in relation to the effect of multicollinearity.

Generalizability of this study should be made cautiously because of the following reasons. First, this study was conducted in particular settings. The four hospitals were deliberately selected. These four hospitals are located in the suburban area of Bangkok, Thailand. Second, although there was no response bias (given almost 100% response rate), sample patients were not randomly selected. Most patients in this study had a primary school education. Thus, there are some limitations to access health care information from other sources, such as from internet or journals related to health. In addition, most patients were at least slightly disabled. Therefore, the finding can not be generalized to other populations.

**Theoretical Constriction**

The theoretical constriction is concerned with the gap between nursing unit characteristics and patient outcomes. The findings showed limited linkage between nursing unit characteristics and patient outcomes. Particularly, nursing unit competency was not associated with any patient outcomes. It is suggested that various factors affect provider behaviors. Nursing unit competency might not represent real nursing care.
Therefore, it is important that provider performance in the real life situation should be the focus of exploration of the relationship between nursing unit attributes and patient outcomes.

**Instrumentation Constrictions**

Instrumentation constrictions are concerned with the number of multiple choice and conceptual equivalence of translated instruments. The Perception of Being Well-Cared For Scale is a 4-point Likert scale with two dimensions of decision, satisfaction and unsatisfaction. Some sample patients found the interpretation difficult and decided that the care they perceived was at the moderate level. Therefore, a neutral point on the scale may help to increase the variance of the score as well as to refine the reliability and validity of the measure.

Most instruments used in this study were originally developed in the United States of America, except for the BIPQ (New Zealand). These concepts might reflect specific domains within the original context. The instrument translation procedures and psychometric testing used in this study improved the validity within the Thai context. Although, all instruments showed adequate content validity within the Thai context, the Self-Care: Condition Management Patient Questionnaire had some limitations when it was used with participants. It was found that one item in this instrument included content that might not fit Thai patients. This item was concerned with how confidently patients were able to adapt a treatment without contacting health care providers. Thai patients usually rely on physicians to make treatment decisions. Most patients perceived that
decisions regarding treatment should be made by physicians and health care providers. Therefore, this self-care ability might not relate to the Thai culture.

Recommendations

The recommendations are established from the research findings. These recommendations are the exploration of relationships between illness representations and different patient outcomes, the examination of the effect of nursing competency on nursing performance, the examination of the effect of group cohesion on nursing performance, and the use of specific measures of self-care activities.

*Exploration of Relationships between Illness Representations and Different Patient Outcomes*

This study suggests future exploration of the relationships between each attribute of illness representations and different types of patient outcomes. It is recognized that patient outcomes are categorized into various perspectives, such as adverse and positive outcomes. In the literature and in this study it was found that the more patients perceived negative illness representations, the less confidence they had in self-care. However, some attributes of illness representations might show inconsistent relationships with different types of patient outcomes. For example, a patient with NIDDM perceived that his illness had a small consequence and did not have any effects on other significant organs. He had not valued diabetic control for several years. Finally, he had renal insufficiency and retinomyopathy. He said that if he had known that diabetes had serious consequences, he would not hurt himself and he would rather control it. Patients with more negative illness representations, although reporting low confidence in self-care, may value life threats and
lead these patients to perform self-care behaviors in order to prevent more serious consequences. This example illustrates that negative consequences lead to positive health behavior. Therefore, exploring the relationships between illness representations and different patient outcomes may provide more understanding of the effect of illness representations on patients with chronic illnesses.

*Examining the Effect of Nursing Competency on Nursing Performance*

Comparing the assessments of competence and job performance may indicate the extent to which the nursing organizations provide the support needed for quality care. High competency but low performance may suggest that an organization is not providing the needed resource, has not clarified standards of care, or is not rewarding effective performance or correcting poor performance (Kak et al., 2006). In addition the results help healthcare organizations determine whether they need to design training and/or continuing education interventions for improving provider performance. To examine the quality of nursing staff, this study suggests the assessments of both competence and performance of nursing staff.

*Examining the Effect of Group Cohesion on Nursing Performance*

The significant finding of the negative effect of group cohesion on patient’s perception of being well-cared for may raise questions for nurse administrators and nurse researchers. Patients in the nursing unit with higher group cohesion perceived decreased perception of being well-cared for. According to the previous discussion, group cohesion could have both negative and positive effects on patient’s perception of being well-cared
for. This issue needs to be examined through how group cohesion affects patient’s perception of being well-cared for.

**Using Specific Measures of Self-Care Activities**

The focus of this study was on chronically ill patients. The instrument used to measure confidence in self-care abilities was not specific to self-care abilities responding to any specific diseases. Although, chronically ill patients have a common self-care need, there are specific self-care abilities required for specific diseases. For example, patients with congestive heart failure need to regularly monitor their weight. Patients with chronic obstructive pulmonary disease are not required to monitor their weight; however, they need to perform deep breathing exercises. Bandura (1997) suggested that specific self-efficacy was a more powerful predictor for behavior changes. Therefore, this study suggests measuring self-care abilities that respond to a specific disease, when researchers focus their studies on a specific disease.

**Summary**

The purpose of this study was to identify the effects of patient characteristics and nursing unit characteristics on nursing-sensitive patient outcomes. The patient characteristics were patient’s age, gender, education, duration of illness, severity of illness, and illness representation. The nursing unit characteristics selected in this study were nursing staff experience, nurse staffing, nursing unit competency, and group cohesion. The nursing-sensitive patient outcomes included patient’s confidence in self-care activities, and perceptions of being well cared for. This study focused on chronically ill patients who had health problems and needed medical treatment in acute care setting in
general hospitals in Thailand. This study included participants with one of six major chronic diseases including: hypertension, diabetes mellitus, chronic obstructive pulmonary disease, congestive heart failure, coronary artery heart disease, and cerebrovascular accident. Two conceptual frameworks were used in this study. The QHOM provided the framework for the identification of the effects of patient and nursing unit characteristics on patient outcomes. The self-regulation model was used to explain the relationship between patient characteristics and patient outcomes.

The cross-sectional correlational design was used to examine the effects of patient and nursing unit characteristics on nursing-sensitive patient outcomes. The participants in this study were 130 chronically ill patients from 8 medical care units in 4 hospitals in Thailand and 90 staff nurses currently working in the same medical care units as the sampled patients. Data were collected from patients using questionnaire interview and from nurses using self-administered questionnaires. All questionnaires were translated into Thai language. In addition, data related to nurse staffing were collected from nursing administration data of each nursing unit. Data analyses procedure involved univariate analysis, bivariate relationship analysis, and multiple regression analysis. All analyses were performed using SPSS version 14 for Windows.

The results related to patient’s confidence in self-care revealed that severity of illness and illness representation were significant predictors of patient’s confidence in self-care, when controlling for nursing unit characteristics. Illness representation was a mediator of the relationship between severity of illness and patient’s confidence in self-care. Nursing unit characteristics were not significant predictors of patient’s confidence
in self-care, when controlling for patient characteristics. Severity of illness was the best predictor of patient’s confidence in self-care. There was a significant individual effect, but non significant contextual effects, on patient’s confidence in self-care.

For patient’s perception of being well-cared for, it was found that severity of illness and group cohesion were correlated with patient’s perception of being well-cared for. There were no significant individual and contextual effects on this patient outcome. When all variables were taken together, severity of illness and group cohesion were the predictors of patient’s perception of being well-cared for.
APPENDIX A

Questionnaires
Patient Demographic Questionnaire

Direction: In the following items, please complete each item as best as possibly by filling in the blanks or marking at the best answer describing you.

1. Age..............years.........months
2. Gender    ☐ Male    ☐ Female
3. Highest level of education completed.................................................................
4. Current diagnosis...............................................................................................  
5. Duration of current diagnosis.................................years.........months
6. Co-morbidities.................................................................years.........months
                                                .................................................................years.........months
                                                .................................................................years.........months
7. Number of hospitalization.................................................................
8. Last admitted in hospital.................................................................................
9. Numbers of days of this hospitalization........................................................
The Brief Illness Perception Questionnaire

For the following questions, please circle the number that best corresponds to your views:

1. How much does your illness affect your life?
   
   1 2 3 4 5 6 7 8 9 10
   
   no affect at all          severely affects my life

2. How long do you think your illness will continue?
   
   1 2 3 4 5 6 7 8 9 10
   
   a very short time         forever

3. How much control do you feel you have over your illness?

   1 2 3 4 5 6 7 8 9 10
   
   absolutely no control               extremely amount
                                                  of control

4. How much do you think your treatment can help your illness?
   
   1 2 3 4 5 6 7 8 9 10
   
   not at all             extremely helpful

5. How much do you experience symptoms from your illness?
   
   1 2 3 4 5 6 7 8 9 10
   
   no symptom at all           many severe
                                                  symptoms

6. How concerned are you about your illness?

   1 2 3 4 5 6 7 8 9 10
   
   not at all              extremely concerned

   concerned

7. How well do you feel you understand your illness?

   1 2 3 4 5 6 7 8 9 10
   
   don’t understand             understand very
                                                  clearly

   at all         understand very

8. How much does your illness affect you emotionally? (e.g. does it make you angry, scared, upset, or depressed?)

   1 2 3 4 5 6 7 8 9 10
   
   not at all affected       extremely affected
                                      emotionally

                                      emotionally

Please list in rank-order the three most important factors that you believe caused your illness. The most important causes for me:

1. ............................................................................................................................
2. ............................................................................................................................
3. ............................................................................................................................
Self-care: Condition management Patient Questionnaire

Having an illness (having been hospitalized) often means doing different tasks and activities to manage your illness when you get home. We would like to know how confident (comfortable) you are in doing certain activities. For each of the following questions, please indicate the number that corresponds to your confidence that you can do the tasks regularly at the present time.

**How confident are you that you can .....**

1. Do all things necessary to manage your illness/disease on a regular basis at home.
   Not at all confident 1 2 3 4 5 6 7 8 9 10 Totally confident

2. Judge when changes in your illness mean you should seek medical help.
   Not at all confident 1 2 3 4 5 6 7 8 9 10 Totally confident

3. Do things to reduce how much your illness/disease affects your everyday life.
   Not at all confident 1 2 3 4 5 6 7 8 9 10 Totally confident

4. Take your medications as prescribed and as needed to manage your illness/disease.
   Not at all confident 1 2 3 4 5 6 7 8 9 10 Totally confident

5. Recognized problems due to your illness or its treatment such as difficulties due to unexpected responses to medications.
   Not at all confident 1 2 3 4 5 6 7 8 9 10 Totally confident

6. Manage basic life activities such as diet or exercise as they relate to your illness.
   Not at all confident 1 2 3 4 5 6 7 8 9 10 Totally confident

7. Get help when needed.
   Not at all confident 1 2 3 4 5 6 7 8 9 10 Totally confident

8. Follow prescribed treatment plan.
   Not at all confident 1 2 3 4 5 6 7 8 9 10 Totally confident

9. Get information about your illness from reliable health care resource.
   Not at all confident 1 2 3 4 5 6 7 8 9 10 Totally confident

10. Adapt your treatment safely without contacting your health care provider.
    Not at all confident 1 2 3 4 5 6 7 8 9 10 Totally confident
How well cared for were you? (WCF)

Instructions: Please circle the number that indicates the best answer matching your opinion.

1. Considering your particular needs, how appropriate are the services you have received?
   - [ ] Highly appropriate
   - [ ] Generally appropriate
   - [ ] Generally inappropriate
   - [ ] Highly inappropriate

2. Have the services you received helped you deal more effectively with your problems?
   - [ ] Yes, it helped a great deal
   - [ ] Yes, it helped somewhat
   - [ ] No, it really didn't help
   - [ ] No, it seemed to make things worse

3. How satisfied are you with the amount of nursing care you have received?
   - [ ] Quite dissatisfied
   - [ ] Indifferent or mildly dissatisfied
   - [ ] Mostly satisfied
   - [ ] Very satisfied

4. Considering your particular needs, how appropriate is the nursing care you have received?
   - [ ] Highly appropriate
   - [ ] Generally appropriate
   - [ ] Generally inappropriate
   - [ ] Highly inappropriate

5. Has the nursing care you received helped you to deal more effectively with your problems?
   - [ ] Yes, it helped a great deal
   - [ ] Yes, it helped somewhat
   - [ ] No, it really didn't help
   - [ ] No, it seemed to make things worse

6. When you talked to the nurse with whom you worked most closely, how closely did she or he listen to you?
   - [ ] Not at all closely
   - [ ] Not too closely
   - [ ] Fairly closely
   - [ ] Very closely
How well cared for were you? (WCF)

7. How clearly did the nurse with whom you worked most closely understand your problems and how you felt about it?
   - Very clearly
   - Clearly
   - Somewhat unclearly
   - Very unclearly

8. How competent and knowledgeable was the nurse with whom you worked most closely?
   - Poor abilities at best
   - Only of average ability
   - Competent and knowledgeable
   - Highly competent and knowledgeable

9. When you talked to the person with whom you worked most closely, how closely did she or he listen to you?
   - Not at all closely
   - Not too closely
   - Fairly closely
   - Very closely

10. How clearly did the person with whom you worked most closely understand your problems and how you felt about it?
    - Very clearly
    - Clearly
    - Somewhat unclearly
    - Very unclearly

11. How competent and knowledgeable was the person with whom you worked most closely?
    - Poor abilities at best
    - Only of average ability
    - Competent and knowledgeable
    - Highly competent and knowledgeable

12. In an overall, general sense, how satisfied are you with the services you have received?
    - Very satisfied
    - Mostly satisfied
    - Indifferent or mildly dissatisfied
    - Quite dissatisfied
How well cared for were you? (WCF)

13. In an overall, general sense, how satisfied are you with the nursing care you have received?
   □ Very satisfied
   □ Mostly satisfied
   □ Indifferent or mildly dissatisfied
   □ Quite dissatisfied

14. How satisfied are you with the respect shown to you by the nurses?
   □ Quite dissatisfied
   □ Indifferent or mildly dissatisfied
   □ Mostly satisfied
   □ Very satisfied

15. How satisfied are you with the amount of time nurses spent on your care?
   □ Quite dissatisfied
   □ Indifferent or mildly dissatisfied
   □ Mostly satisfied
   □ Very satisfied

16. How satisfied were you that the nurse worked on your behalf to get you the care you needed?
   □ Quite dissatisfied
   □ Indifferent or mildly dissatisfied
   □ Mostly satisfied
   □ Very satisfied
แบบบันทึกข้อมูลทั่วไป

กรุณาเติมคำลงในช่องว่างให้ตรงกับลักษณะของท่าน
1. อายุ.........................ป...........................................
2. เพศ..........................................................
3. ระดับการศึกษาสูงสุด...........................
4. การวินิจฉัยเมื่อเข้ารับการรักษาครั้งนี้ ...........................................................
5. ระยะเวลาที่ได้รับการวินิจฉัยเป็นโรคนี้.........................................................ป..............เดือน
6. การรักษาโรคอื่นรวม.........................................................ระยะเวลาที่เป็น.........................................................ป..............เดือน
7. จำนวนครั้งที่เคยเข้าพักผู้ป่วยในโรงพยาบาล.........................................................ครั้ง
8. ครั้งสุดท้ายเคยเข้าพักผู้ป่วยในโรงพยาบาลเมื่อ...........................................
9. จำนวนวันที่นอนโรงพยาบาลในครั้งนี้...........................................................วัน
แบบสอบถามความคิดเห็นเกี่ยวกับความเจ็บป่วย

กรุณาตั้งค่าตัวเลขที่แสดงถึงความคิดเห็นของท่านโดยให้ตัวเลขดังนี้

1. ความเจ็บป่วยมีผลกระทบต่อการดำเนินชีวิตของท่านมากน้อยเพียงใด
   1 2 3 4 5 6 7 8 9 10
   ไม่มีผลกระทบ มีผลกระทบมากที่สุด

2. ท่านคิดว่าความเจ็บป่วยของท่านจะอยู่ร่วมเนินต่อไปไหม
   1 2 3 4 5 6 7 8 9 10
   หายขาด ตลอดชีวิต

3. ท่านรู้สึกว่าตัวของท่านสามารถควบคุมความเจ็บป่วยได้มากน้อยเพียงใด
   1 2 3 4 5 6 7 8 9 10
   ไม่สามารถควบคุมได้ สามารถควบคุมได้ดีที่สุด

4. ท่านคิดว่าผู้ดูแลท่านมีความเข้าใจในความเจ็บป่วยได้มากน้อยเพียงใด
   1 2 3 4 5 6 7 8 9 10
   ไม่เข้าใจ เข้าใจมากที่สุด

5. ท่านมีอาการอันเนื่องมาจากภาวะเจ็บป่วยมากน้อยเพียงใด
   1 2 3 4 5 6 7 8 9 10
   ไม่มีอาการใด ๆ เหล่า อาการรุนแรงมากที่สุด

6. ท่านกังวลเกี่ยวกับความเจ็บป่วยของท่านมากน้อยเพียงใด
   1 2 3 4 5 6 7 8 9 10
   ไม่กังวลเลย กังวลมากที่สุด

7. ท่านรู้สึกว่าท่านเข้าใจความเจ็บป่วยของท่านชัดเจนเพียงใด
   1 2 3 4 5 6 7 8 9 10
   ไม่เข้าใจเลย เข้าใจชัดเจนมาก

8. ความเจ็บป่วยมีผลกระทบต่ออารมณ์ของท่านมากน้อยเพียงใด
   1 2 3 4 5 6 7 8 9 10
   ไม่มีผลกระทบต่ออารมณ์ มีผลกระทบต่ออารมณ์มากที่สุด

ท่านเชื่อว่าอะไรเป็นสาเหตุของความเจ็บป่วยของท่าน
โปรดเรียงลำดับความสำคัญจาก 1-3 (มาก-น้อย)

1. ............................................................
2. ............................................................
3. ............................................................
ความมั่นใจในการดูแลตนเอง: แบบสอบถามการจัดการกับโรคและความเจ็บป่วย

1. ท่านมีความมั่นใจในการปฏิบัติกิจกรรมต่าง ๆ ที่จำเป็น เช่น การรับประทานยา อาหาร หรือออกกำลังกาย

2. ท่านมีความมั่นใจในการปฏิบัติกิจกรรมต่าง ๆ ที่จำเป็น เช่น การรับประทานยา อาหาร หรือออกกำลังกาย

3. ท่านมีความมั่นใจในการปฏิบัติกิจกรรมต่าง ๆ ที่จำเป็น เช่น การรับประทานยา อาหาร หรือออกกำลังกาย

4. ท่านมีความมั่นใจในการปฏิบัติกิจกรรมต่าง ๆ ที่จำเป็น เช่น การรับประทานยา อาหาร หรือออกกำลังกาย

5. ท่านมีความมั่นใจในการปฏิบัติกิจกรรมต่าง ๆ ที่จำเป็น เช่น การรับประทานยา อาหาร หรือออกกำลังกาย

6. ท่านมีความมั่นใจในการปฏิบัติกิจกรรมต่าง ๆ ที่จำเป็น เช่น การรับประทานยา อาหาร หรือออกกำลังกาย

7. ท่านมีความมั่นใจในการปฏิบัติกิจกรรมต่าง ๆ ที่จำเป็น เช่น การรับประทานยา อาหาร หรือออกกำลังกาย

8. ท่านมีความมั่นใจในการปฏิบัติกิจกรรมต่าง ๆ ที่จำเป็น เช่น การรับประทานยา อาหาร หรือออกกำลังกาย

9. ท่านมีความมั่นใจในการปฏิบัติกิจกรรมต่าง ๆ ที่จำเป็น เช่น การรับประทานยา อาหาร หรือออกกำลังกาย

10. ท่านมีความมั่นใจในการปฏิบัติกิจกรรมต่าง ๆ ที่จำเป็น เช่น การรับประทานยา อาหาร หรือออกกำลังกาย

กรุณาระบุระดับความมั่นใจของท่านในการปฏิบัติกิจกรรมต่าง ๆ ดังกล่าวโดยระบุจุดที่แสดงถึงระดับความมั่นใจของท่านจาก 1 ถึง 10 ตามที่ระบุไว้ในตารางด้านล่าง:
ท่านได้รับการดูแลอย่างไร?

กรุณาใส่เครื่องหมาย ✓ ลงในกล่อง □ ข้างคำตอบที่ตรงกับความคิดเห็นของท่านมากที่สุด

1. โดยพิจารณาจากความต้องการของท่านแล้ว การบริการที่ท่านได้รับ มีความเหมาะสมอย่างไร?
   □ เหมาะสมอย่างมาก
   □ เหมาะสม
   □ ไม่เหมาะสม
   □ ไม่เหมาะสมอย่างมาก

2. การบริการที่ท่านได้รับ สามารถช่วยท่านจัดการกับปัญหาอย่างมีประสิทธิภาพหรือไม่?
   □ ช่วยได้มากที่เดียว
   □ ช่วยได้บ้าง
   □ ไม่ช่วยเลย
   □ ดูเหมือนว่าทำให้สิ่งต่าง ๆ แย่ลง

3. ท่านพอใจกับปริมาณของการพยาบาลที่ท่านได้รับอย่างไร?
   □ ค่อนข้างไม่พอใจ
   □ ไม่พอใจเล็กน้อย
   □ ค่อนข้างพอใจ
   □ พอใจอย่างมาก

4. โดยพิจารณาจากความต้องการของท่านแล้ว การพยาบาลที่ท่านได้รับ มีความเหมาะสมอย่างไร?
   □ เหมาะสมอย่างมาก
   □ เหมาะสม
   □ ไม่เหมาะสม
   □ ไม่เหมาะสมอย่างมาก

5. การพยาบาลที่ท่านได้รับ สามารถช่วยท่านจัดการกับปัญหาอย่างมีประสิทธิภาพหรือไม่?
   □ ช่วยได้มากที่เดียว
   □ ช่วยได้บ้าง
   □ ไม่ช่วยเลย
   □ ดูเหมือนว่าทำให้สิ่งต่าง ๆ แย่ลง

6. พยาบาลที่ท่านติดต่อด้วยบ่อย ๆ รับฟังท่านอย่างใกล้ชิดในระดับใด?
   □ ใกล้ชิดมาก
   □ ค่อนข้างใกล้ชิด
   □ ค่อนข้างไม่ใกล้ชิด
   □ ไม่ใกล้ชิดเลย
คำถามการศึกษา (ต่อ)

7. พยาบาลที่ท่านติดต่อต่อวัยบอย ๆ เข้าใจปัญหาของท่านชัดเจนอย่างไร?
   □ ชัดเจนมาก
   □ ค่อนข้างชัดเจน
   □ ค่อนข้างไม่ชัดเจน
   □ ไม่ชัดเจนเลย

8. พยาบาลที่ท่านติดต่อต่อวัยบอย ๆ มีความรู้/ความสามารถเป็นอย่างไร?
   □ มีความรู้มาก
   □ มีความรู้ค่อนข้างมาก
   □ มีความรู้เล็กน้อย
   □ ไม่มีความรู้เลย
   □ ไม่ทราบ/ประเมินไม่ได้

9. นอกจากพยาบาลแล้ว เจ้าหน้าที่ที่ท่านติดต่อต่อวัยบอย ๆ รับฟังท่านอย่างใกล้ชิดในระดับใด?
   □ ไม่ใกล้ชิดเลย
   □ ค่อนข้างไม่ใกล้ชิด
   □ ค่อนข้างใกล้ชิด
   □ ใกล้ชิดมาก

10. นอกจากพยาบาลแล้ว เจ้าหน้าที่ที่ท่านติดต่อต่อวัยบอย ๆ เข้าใจปัญหาของท่านชัดเจนอย่างไร?
    □ ชัดเจนมาก
    □ ค่อนข้างชัดเจน
    □ ค่อนข้างไม่ชัดเจน
    □ ไม่ชัดเจนเลย

11. นอกจากพยาบาลแล้ว เจ้าหน้าที่ที่ท่านติดต่อต่อวัยบอย ๆ มีความรู้/ความสามารถเป็นอย่างไร?
     □ มีความรู้มาก
     □ มีความรู้ค่อนข้างมาก
     □ มีความรู้เล็กน้อย
     □ ไม่มีความรู้เลย
     □ ไม่ทราบ/ประเมินไม่ได้

12. ในความรู้สึกโดยทั่วไปแล้ว ท่านพอใจกับบริการที่ท่านได้รับอย่างไร?
     □ พอใจมาก
     □ ค่อนข้างพอใจ
     □ ไม่พอใจเล็กน้อย
     □ ไม่พอใจเลย
     □ ไม่ทราบ
ท่านได้รับการดูแลอย่างไร? (ต่อ)

13. ในความรู้สึกโดยทั่วไปแล้ว ท่านพอใจกับการพยาบาลที่ท่านได้รับอย่างไร?
   ☐ พอใจมาก
   ☐ ค่อนข้างพอใจ
   ☐ ไม่พอใจเล็กน้อย
   ☐ ไม่พอใจเลย

14. ท่านพอใจอย่างไรกับการเคารพในความเป็นท่านโดยพยาบาล?
   ☐ ไม่พอใจเลย
   ☐ ไม่พอใจเล็กน้อย
   ☐ ค่อนข้างพอใจ
   ☐ พอใจมาก

15. ท่านพอใจอย่างไรกับปริมาณเวลาที่พยาบาลใช้ในการดูแลท่าน?
   ☐ ไม่พอใจเลย
   ☐ ไม่พอใจเล็กน้อย
   ☐ ค่อนข้างพอใจ
   ☐ พอใจมาก

16. ท่านพอใจอย่างไรที่พยาบาลทำหน้าที่เป็นตัวแทนท่านเพื่อให้ท่านได้รับการดูแลตามที่ท่านต้องการ?
   ☐ ไม่พอใจเลย
   ☐ ไม่พอใจเล็กน้อย
   ☐ ค่อนข้างพอใจ
   ☐ พอใจมาก
Nursing Staff Demographic Questionnaire

Direction: In the following items, please complete each item as best as possibly by filling in the blanks.

1. What is your age?
                                                                 years
2. What is the highest degree in nursing that you have obtained?
                                                                                        
3. How many years have you worked as a professional nurse?
                                                                 years
4. How many years have you worked in medical care unit?
                                                                 years
5. How many years have you worked in this current unit?
                                                                 years
6. In the last three years, did you attend any continuing education sessions related to your work? What is/are this/those sessions? And how many months for that/those sessions?
   Course.................................For..................months
   Course.................................For..................months
   Course.................................For..................months
   Course.................................For..................months
   Course.................................For..................months
Nursing Unit Competency Scale

Direction: Please put the check mark (√) in the place that indicate the level of the abilities of you and your colleagues in this unit to perform nursing roles. These abilities refer to the workgroup and not the individual nurse. The levels of abilities are categorized into 5 levels including:

1 = very poor; needs to be extensively improved and recommended  
2 = poor; needs to be improved and recommended  
3 = indifferent  
4 = good  
5 = very good

<table>
<thead>
<tr>
<th>Nursing Unit Competency</th>
<th>Levels of ability</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. We explore patient education needs carefully.</td>
<td>1  2  3  4  5</td>
</tr>
<tr>
<td>2. We teach patients and family for self-care at home.</td>
<td></td>
</tr>
<tr>
<td>3. We provide patient education when patients are ready.</td>
<td></td>
</tr>
<tr>
<td>4. We evaluate patient education outcomes together with patients and family.</td>
<td></td>
</tr>
<tr>
<td>5. We adjust patient education strategies appropriate for age of patients, educational background, and orientation.</td>
<td></td>
</tr>
<tr>
<td>6. We are able to conduct physical assessments of patients as recommended by theory or our nursing organization.</td>
<td></td>
</tr>
<tr>
<td>7. We are able to conduct psychosocial assessments of patients and families.</td>
<td></td>
</tr>
<tr>
<td>8. We plan patient care according to individual needs.</td>
<td></td>
</tr>
<tr>
<td>9. We are able to recognize situations posing a threat to life early.</td>
<td></td>
</tr>
<tr>
<td>10. We act appropriately in life-threatening situations.</td>
<td></td>
</tr>
<tr>
<td>11. We prioritize our activities flexibly according to changing patient conditions.</td>
<td></td>
</tr>
<tr>
<td>12. We support patients’ appropriate coping strategies.</td>
<td></td>
</tr>
<tr>
<td>13. We evaluate patient care outcomes according to patients’ problem and nursing objectives.</td>
<td></td>
</tr>
<tr>
<td>14. We accurately document patient care.</td>
<td></td>
</tr>
<tr>
<td>15. We are able to perform technical procedures such as administer medication, oxygen therapy, and isolation precautions.</td>
<td></td>
</tr>
<tr>
<td>16. We are able to use various devices for patient care.</td>
<td></td>
</tr>
<tr>
<td>17. We consider ethical principles, i.e. patients’ right in making clinical decision.</td>
<td></td>
</tr>
<tr>
<td>17. We are able to work with multidisciplinary clinical team for quality of care.</td>
<td></td>
</tr>
</tbody>
</table>
**Nursing Unit Competency Scale - Continued**

<table>
<thead>
<tr>
<th>Nursing Unit Competency</th>
<th>Levels of ability</th>
</tr>
</thead>
<tbody>
<tr>
<td>19. We recognize patients’ satisfaction with nursing care.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>20. We facilitate safe patient care.</td>
<td></td>
</tr>
<tr>
<td>21. We incorporate relevant knowledge, i.e. from research findings, to provide optimal care.</td>
<td></td>
</tr>
<tr>
<td>22. We conduct nursing research to develop nursing knowledge and improve quality of care.</td>
<td></td>
</tr>
<tr>
<td>23. We listen and express a feeling of acceptance of each patient.</td>
<td></td>
</tr>
<tr>
<td>24. We contribute an atmosphere of mutual trust, acceptance, and respect among our team members.</td>
<td></td>
</tr>
<tr>
<td>25. We are able to coordinate care with other healthcare providers, i.e. social workers, physical therapists.</td>
<td></td>
</tr>
<tr>
<td>26. We guide staff members to duties corresponding to their skill levels.</td>
<td></td>
</tr>
<tr>
<td>27. We give feedback to colleagues in a constructive way.</td>
<td></td>
</tr>
<tr>
<td>28. We remain open to the suggestions from colleagues.</td>
<td></td>
</tr>
<tr>
<td>29. We recognize for achievement to individuals in our team.</td>
<td></td>
</tr>
<tr>
<td>30. We search out challenging opportunities to improve quality care.</td>
<td></td>
</tr>
<tr>
<td>31. We foster collaboration by promoting cooperative goals and building trust.</td>
<td></td>
</tr>
<tr>
<td>32. We express concern for others, which strengthens self-worth of others</td>
<td></td>
</tr>
</tbody>
</table>
Group Cohesion

Check the ONE response for each of the following six items, which BEST describes your opinion about colleague group (nursing staff on your unit) with whom you work:

1. I believe the productivity of this group is:.........................
   ------Very much above average
   ------Above average
   ------Slightly above average
   ------Average
   ------Slightly below average
   ------Below average
   ------Very much below average

2. I believe the efficiency of the group is:.........................
   ------Very much above average
   ------Above average
   ------Slightly above average
   ------Average
   ------Slightly below average
   ------Below average
   ------Very much below average

3. I believe the morale of the group is:.........................
   ------Very much above average
   ------Above average
   ------Slightly above average
   ------Average
   ------Slightly below average
   ------Below average
   ------Very much below average

4. I believe the feeling of belongingness in this group is:.........................
   ------Very much above average
   ------Above average
   ------Slightly above average
   ------Average
   ------Slightly below average
   ------Below average
   ------Very much below average
Group Cohesion - Continued

5. In terms of personal feelings about this group, I feel I:

------Like it very much
------Like it
------Like it slightly
------Neither particularly like nor dislike it
------Dislike it slightly
------Dislike it
------Dislike it very much

6. In terms of working together with this group, I believe I:

------Enjoy it very much
------Enjoy it
------Enjoy it slightly
------Neither particularly enjoy nor dislike it
------Enjoy it slightly
------Enjoy it
------Enjoy it very much
แบบบัตรข้อมูลทั่วไปของพยาบาล
โรงพยาบาล...............................................หอผู้ป่วย........................................
กรุณาเติมคำลงในช่องว่างให้ตรงกับลักษณะของท่าน
1. อาย..............................................ป........................................เดือน
2. ระดับการศึกษาสูงสุดทางการพยาบาล..........................สาขา......................
3. ระยะเวลาที่ปฏิบัติงานพยาบาลทั้งหมด..............................ป........................................เดือน
4. ระยะเวลาที่ปฏิบัติงานในแผนกอายุรกรรม.......................ป........................................เดือน
5. ระยะเวลาที่ปฏิบัติงานในหน่วยงานนี้..............................ป........................................เดือน
6. ภายในระยะเวลา 3 ปีที่ผ่านมา
ได้รับการอบรมหลักสูตรเฉพาะทางสาขาการพยาบาลอายุรกรรมใดบ้าง
หลักสูตร.........................................................ระยะเวลาที่อบรม......................เดือน............สัปดาห์
หลักสูตร.........................................................ระยะเวลาที่อบรม......................เดือน............สัปดาห์
หลักสูตร.........................................................ระยะเวลาที่อบรม......................เดือน............สัปดาห์
หลักสูตร.........................................................ระยะเวลาที่อบรม......................เดือน............สัปดาห์
สมรรถนะทางการพยาบาลของหน่วยงาน

การให้เครื่องหมาย √ ในช่องที่ระบุระดับความสามารถในการปฏิบัติหน้าที่

หลักฐานการพยาบาลของตนและของพยาบาลทุกคนในหน่วยงาน
เป็นความสามารถของพยาบาลโดยรวมของหน่วยป่วย ไม่ใช่เฉพาะบุคคล

ในที่นี้แบ่งระดับความสามารถออกเป็น 5 ระดับคือ

1. หน่วยงาน พบปัญหาโดยรวมของหน่วยงานปฏิบัติได้ไม่ถูกต้อง ต้องการปรับปรุงและชี้แนะมาก
2. หน่วยงาน พบปัญหาของหน่วยงานปฏิบัติได้ไม่ถูกต้อง ต้องการปรับปรุงและชี้แนะอย่างมาก
3. หน่วยงาน พบปัญหาของหน่วยงานปฏิบัติได้ในระดับปรับปรุง
4. หน่วยงาน พบปัญหาของหน่วยงานปฏิบัติได้ในระดับดีมาก
5. หน่วยงาน สามารถใช้เป็นแบบอย่างได้

โดยภาพรวมพยาบาลในหน่วยงานของท่านสามารถ...

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<td>6. ประเมินสภาพการดำเนินการของผู้ป่วยอย่างเป็นระบบตามทฤษฎี</td>
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<td>7. การเตรียมงานพยาบาลตามสภาพการดำเนินการ</td>
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<td>9. ประเมินผลการดำเนินการตามทฤษฎีและให้คำปรึกษาด้วยการพยาบาล</td>
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<tr>
<td>10. การจัดลำดับความสำคัญของกิจกรรมทางการพยาบาล</td>
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<td>11. การจัดลำดับความสำคัญของกิจกรรมทางการพยาบาล</td>
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<tr>
<td>12. สนับสนุนการใช้วิธีการพยาบาลที่เหมาะสมของผู้ป่วย</td>
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<tr>
<td>13. ประเมินผลการดำเนินการตามทฤษฎีของผู้ป่วยและวัตถุประสงค์ของการพยาบาล</td>
<td>1 2 3 4 5</td>
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</table>
สมรรถนะทางการพยาบาลของหน่วยงาน (ต่อ)

<table>
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<tr>
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<th>ระดับความสามารถในการปฏิบัติ</th>
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<td>20. ให้การพยาบาลผู้ป่วยโดยอย่างปลอดภัย</td>
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<td>23. รับฟังและแสดงออกด้วยคำพูดและทำที่แสดงอาการยอมรับความรู้สึกของผู้ป่วยแต่ละคน</td>
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<td>24. สาธารรยาห์ของการไว้วางใจและการเคาระหว่างสมาชิกในทีม</td>
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<td>27. ให้ข้อมูลย้อนกลับแก่ผู้ร่วมงานในเชิงสร้างสรรค์</td>
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<tr>
<td>31. กระตุ้นให้เกิดการร่วมมือในการทำงานโดยการสร้างเป้าหมายร่วมกัน</td>
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<tr>
<td>32. แสดงออกถึงความสำเร็จกับเพื่อนร่วมงานและเพื่อนร่วมงาน</td>
<td>1 2 3 4 5</td>
</tr>
</tbody>
</table>
แบบประเมินความเห็นแย้งของทีม

กรุณาระบุเครื่องหมาย ✓ ลงในช่องที่ระบุระดับความคิดเห็นของคุณเกี่ยวกับการทำงานร่วมกันของพยาบาลในหน่วยงานนี้

| 1. ฉันเชื่อว่าหอผู้ป่วยนี้สร้างผลงานได้เป็นที่ยอมรับ | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2. ฉันเชื่อว่าหอผู้ป่วยนี้ทรงพลังการขนบกล้ากร้าวสุดยอดและเวลาอย่างพุ่มพันทิสด(ประสิทธิผล)เพื่อคุณภาพงาน | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3. ฉันเชื่อห้องนั้นเครื่องช่วยก้าวไกลของห้องผู้ป่วยนี้ | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4. ฉันมีความสุขกับการเป็นเจ้าของของห้องผู้ป่วยนี้ | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

กรุณาระบุเครื่องหมาย ✓ ลงหน้าข้อใดข้อหนึ่งที่ระบุระดับความมั่นใจของคุณเกี่ยวกับการทำงานร่วมกันของพยาบาลในหน่วยงานนี้

| 6. ฉันรู้สึกว่าเจ้าของห้องผู้ป่วยนี้ | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 7. ฉันรู้สึกว่าเจ้าของห้องผู้ป่วยนี้ | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
APPENDIX B

University of Arizona Institution Review Board Approval
12 January 2006

Sriwan Meeboon, Ph.D. Candidate
Advisor: Kathleen Insel, Ph.D.
College of Nursing
PO Box 210203

RE: THE EFFECTS OF PATIENT AND NURSING UNIT CHARACTERISTICS ON PATIENT OUTCOMES FOR HOSPITALIZED PATIENTS WITH CHRONIC ILLNESS IN THAILAND

Dear Ms. Meeboon,

We received documents concerning your above cited project. Regulations published by the U.S. Department of Health and Human Services [45 CFR Part 46.101(b)(2)] exempt this type of research from review by our Institutional Review Board. Note: Copies of your disclaimer forms (English and Thai), with IRB approval stamp affixed, are enclosed for duplication and use in enrolling subjects.

Please be advised that clearance from academic and/or other official authorities for site(s) where proposed research is to be conducted must be obtained prior to performance of this study. Evidence of this must be submitted to the Human Subjects Protection Program office.

Exempt status is granted with the understanding that no further changes or additions will be made either to the procedures followed or to the consenting instrument used (copies of which we have on file) without the review and approval of the Human Subjects Committee and your College or Departmental Review Committee. Any research related physical or psychological harm to any subject must also be reported to each committee.

Thank you for informing us of your work. If you have any questions concerning the above, please contact this office.

Sincerely,

[Signature]

Rebecca Dahl, R.N., Ph.D.
Director
Human Subjects Protection Program

cc: Departmental/College Review Committee
APPENDIX C

Subject Disclaimer Form
SUBJECT DISCLAIMER FORM
(Patient)

Title of Project: "The effects of patient and nursing unit characteristics on patient outcomes for hospitalized patients with chronic illness in Thailand."

You are being invited to voluntarily participate in the above-titled research study. The purpose of the study is to identify factors affecting patient outcomes for hospitalized patients with chronic illness in Thailand. You are eligible to participate because you are (a) an adult patient age 21 or older, (b) able to respond to questions, (c) directly admitted from outpatient or emergency departments to a medical care unit, (d) hospitalized at least 3 days, (e) discharge directly to home, and (f) able to read and write the Thai language.

If you agree to participate, your participation will involve responding to items asking you about your age, gender, education, duration of illness, your perception of your illness, confidence in your self-care abilities and your perception of being well-cared for. The participation will take place in your patient room and will last approximately 30 minutes. You may choose not to answer some or all of the questions. Your name will not appear on these questionnaires.

Any questions you have will be answered and you may withdraw from the study at any time. It will not affect your medical care. There are no major risks from your participation. There may be risk that reading the items on the questionnaires may cause you to be concerned about your illness and self-care abilities. There is no direct benefit from your participation is expected. There is no cost to you except for your time and you will not be compensated for your participation.

Only the principal investigator will have access to the information that you provide. In order to maintain your confidentiality, your name will not be recorded in any documents that result from this project. The questionnaires will be kept in a cabinet in a secure place.

You can obtain further information from the principal investigator, Sriwan Meeboon, Ph.D. candidate, RN, at 02973-1980. If you have questions concerning your rights as a research subject, you may call the University of Arizona Human Subjects Protection Program office at 001-1-520-626-6721.

By participating in this study, you are giving permission for the investigator to use your information for study purpose.

Thank you,

Sriwan Meeboon, Ph.D. candidate, RN
แบบฟอร์มการแจ้งสิทธิของการเป็นผู้ให้ข้อมูล (ผู้ป่วย)

ชื่อโครงการ ผลการระบบที่ดูแลผู้ป่วยและสิทธิของผู้ป่วยเกี่ยวกับการเข้าร่วมในโครงการ

ท่านเป็นผู้ที่ได้รับการเชิญให้เข้าร่วมการศึกษาเกี่ยวกับผลการระบบที่ดูแลผู้ป่วย ท่านมีสิทธิได้รับผลประโยชน์เกี่ยวกับการศึกษาหรือผลการศึกษาที่เกิดขึ้นจากการเข้าร่วมโครงการนี้

(ก) เข้าร่วมโครงการศึกษาในโรงพยาบาลต้องได้รับความยินยอมจากผู้ป่วยที่มีความสมัครใจในการเข้าร่วมโครงการที่ท่านจะเข้าร่วม และท่านต้องได้รับข้อมูลที่สอดคล้องกับโครงการศึกษาที่ท่านจะเข้าร่วม

(ข) ถ้าท่านประสงค์จะไม่เข้าร่วมโครงการศึกษา ท่านสามารถแจ้งความประสงค์ของท่านได้โดยการส่งหนังสือแจ้งความประสงค์ของท่านมาสู่สถาบันที่เกี่ยวข้อง

(ค) การเข้าร่วมโครงการของท่านจะไม่กระทบต่อสิทธิบัตรของท่าน

(ง) การเข้าร่วมโครงการของท่านจะไม่กระทบต่อสิทธิบัตรของท่าน
SUBJECT DISCLAIMER FORM
(Nurse)

Title of Project: "The effects of patient and nursing unit characteristics on patient outcomes for hospitalized patients with chronic illness in Thailand."

You are being invited to voluntarily participate in the above-titled research study. The purpose of the study is to identify factors affecting patient outcomes for hospitalized patients with chronic illness in Thailand. You are eligible to participate because you are a full-time nurse and have been working in the medical care unit for more than 6 months. You provide direct nursing care to patients.

If you agree to participate, your participation will involve responding to items asking you about your education, experience, group cohesion, and the ability of staff nurses in your unit to perform nursing roles. The participation will take place in a location convenient for you and will last approximately 30 minutes. You may choose not to answer some or all of the questions. Your name will not appear on these questionnaires.

Any questions you have will be answered and you may withdraw from the study at any time. Whether you participate or not will not affect your career in nursing. There are no known risks from your participation and no direct benefit from your participation is expected. There is no cost to you except for your time and you will not be compensated for your participation.

Only the principal investigator will have access to the information that you provide. In order to maintain your confidentiality, your name will not be recorded in any documents that result from this project. The questionnaires will be kept in a cabinet in a secure place.

You can obtain further information from the principal investigator, Sriwan Meeboon, Ph.D. candidate, RN, at 02993-1980. If you have questions concerning your rights as a research subject, you may call the University of Arizona Human Subjects Protection Program office at 001-1-520-626-6721.

By participating in this study, you are giving permission for the investigator to use your information for study purpose.

Thank you,

Sriwan Meeboon Ph.D. candidate, RN
แบบฟอร์มการแจ้งสิทธิของการเป็นผู้ให้ข้อมูล (ạmบัตร)

ชื่อโครงการ ผลกระทบของลักษณะผู้ป่วยและลักษณะหน่วยงานแพทย์คลอดที่รับผิด
โรคเรื้อรังที่ข้าบริการรักษาในโรงพยาบาล

ท่านเป็นผู้ที่ได้รับการซัพพลิเคชันการศึกษาเกี่ยวกับผลกระทบของลักษณะผู้ป่วยและลักษณะ
หน่วยงานแพทย์คลอดที่รับผิดของผู้ป่วยโรคเรื้อรังที่ข้าบริการรักษาในโรงพยาบาล การจะตัดสินใจ
เข้าร่วมในการศึกษารับรู้ข้อมูลเกี่ยวกับความเสี่ยงของท่าน วัตถุประสงค์ของการศึกษาเรื่องนี้
เพื่อวิเคราะห์ผลกระทบของลักษณะผู้ป่วยและหน่วยงานแพทย์คลอดที่รับผิดของผู้ป่วยโรคเรื้อรัง
ที่ข้าบริการรักษาในโรงพยาบาล ท่านเป็นผู้ที่มีความสามารถเหมาะสมที่จะเข้าร่วมการศึกษาเรื่องนี้
เพื่อเขา ท่านปฏิบัติงานในหน่วยผู้ป่วยรองอาหารเป็นเวลา 6 เดือนขึ้นไป และให้การแพทย์
ผู้ป่วยโดยตรง

ถ้าผ่านเอกซ์เรจการศึกษาเรื่องนี้ การร่วมมือประกอบด้วยการประเมินข้อตกลงดังกล่าว
มีการซัพพลิเคชัน ความสมอลล์และภาระการสำรับภัยต่อความเสี่ยงในการทดลองและสาธารณรัฐ
ถ้าการได้รับการคุ้มครองดี การร่วมมือจะได้รับจาก 30 หน่วยในการทดลองแบบสนับสนุน
โดยจัดทำผ่านที่มีการคุ้มครองให้ และท่านจะได้รับการสนับสนุนในด้านการรักษาโรคเรื้อรัง
ทั้งหมดได้ ซึ่งของท่านจะไม่ปรากฏอยู่ในแบบสอบถามที่นี้

ถ้าท่านมีข้อสงสัยใดๆสามารถสอบถามได้ ท่านจะได้รับการร่วมมือหรือเลือกไม่ได้ไม่
ไม่ได้รับการสนับสนุนจากการเข้าร่วมศึกษา ไม่มีสิทธิ์ไปยังข้อตกลงใดๆโดยตรงจากทางการเข้าร่วมศึกษา
และไม่มีการเข้าร่วมจากทางผู้ดำเนินการ

เรียนผู้รับผิดชอบท่านที่สามารถใช้ข้อมูลได้ และเพื่อเป็นการรักษาความลับไม่มีข้อของทุ่งปรากฏ
อยู่ในเอกสารใดๆ แบบสอบถามได้จากท่านจะถูกเก็บในสิ่งล็อกที่มีสิ่งล็อก

ท่านสามารถสอบถามข้อมูลเพื่อแจ้งได้จากผู้รับผิดชอบ นางสาวสวัสดิ์ แก้วสุรินทร์ นักบุญ
หมายเลขโทรศัพท์โทร.02973-1980 หรือท่านก็สามารถแจ้งกับผู้รับผิดชอบผู้รับผิดชอบรูป
ท่านสามารถสอบถามได้ที่สำนักงานโครงการพัฒนาศักยภาพผู้รับร่วมบริเวณจังหวัดราชบุรี หมายเลขโทรศัพท์ (520) 626-6721

การร่วมแข่งขันการศึกษาเรื่องนี้ หน่วยงานที่ให้ข้อมูลให้ผู้รับผิดชอบข้อมูลได้จากท่านเพื่อ
วัตถุประสงค์ของการศึกษาเรื่องนี้ได้ถาวรยิ่งล้าว

ข้อสอบคุณสมบัติผู้ยังสูง

ศรีวราภรณ์ แก้วสุรินทร์
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